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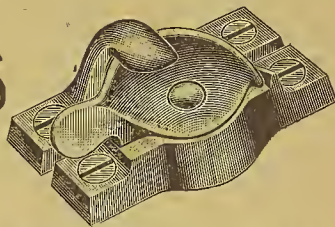
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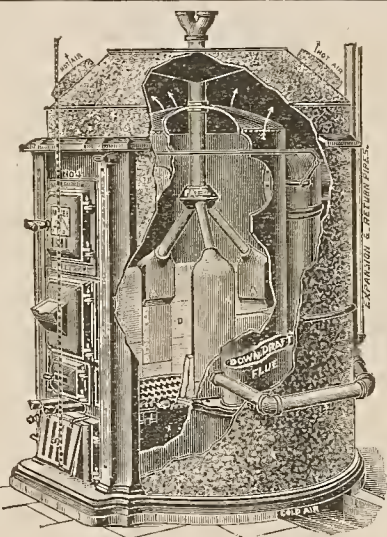
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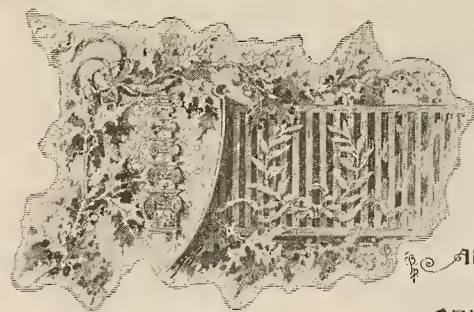


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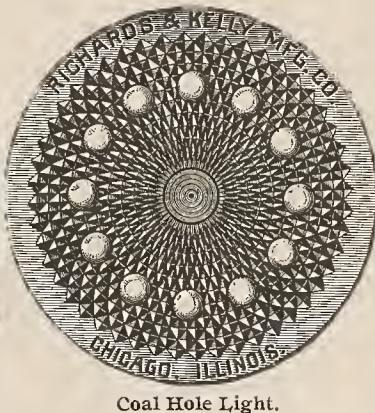
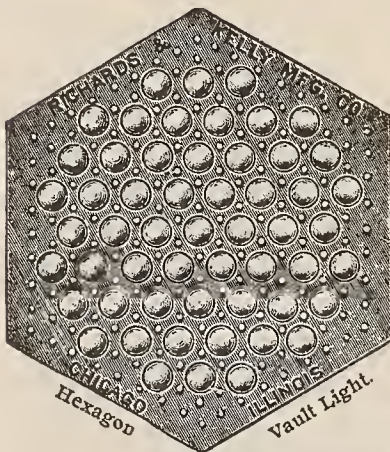
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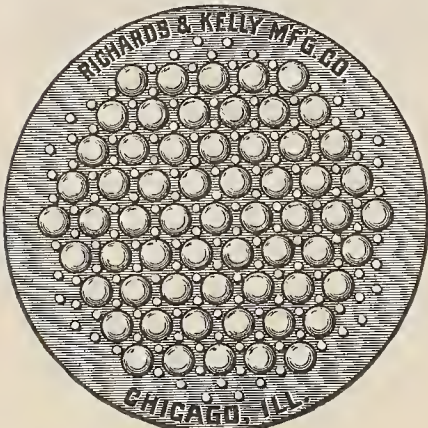
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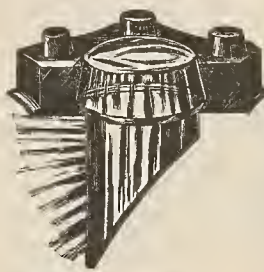
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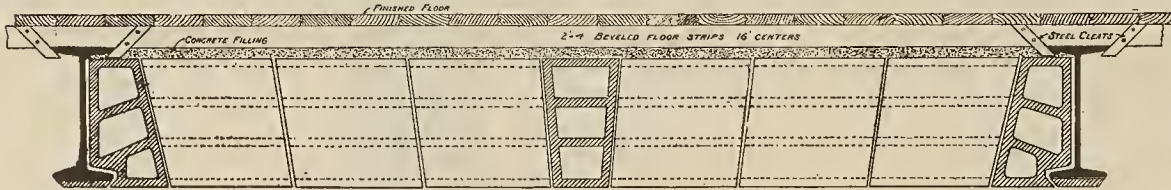
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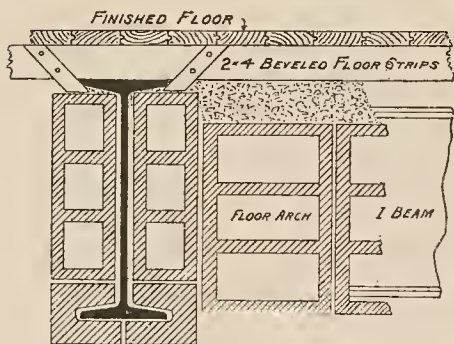
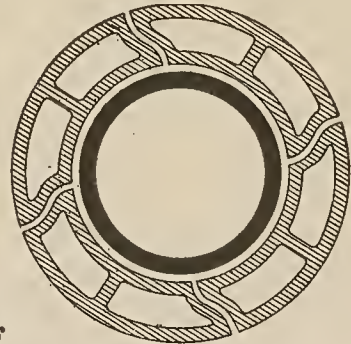
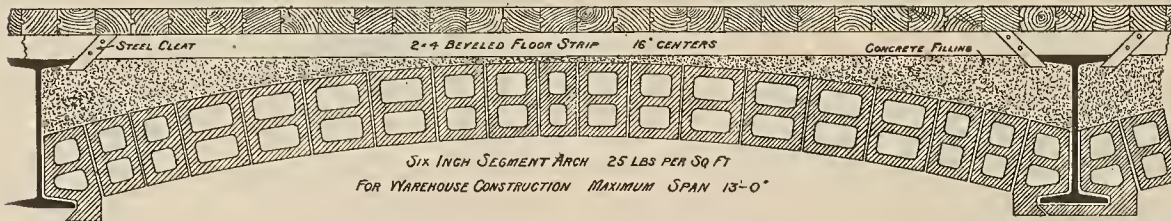
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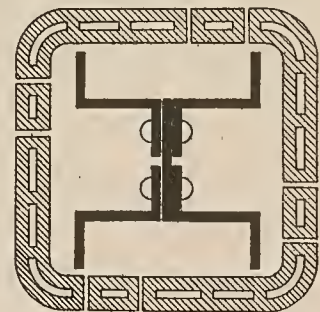
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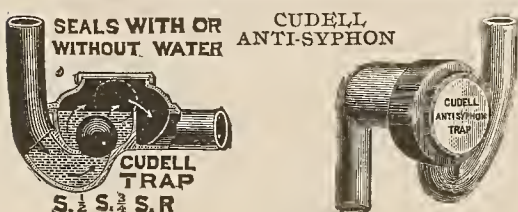
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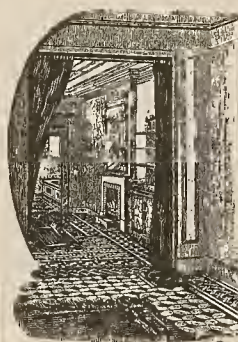
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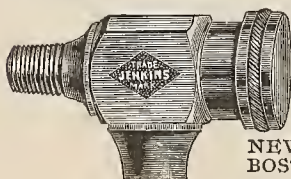
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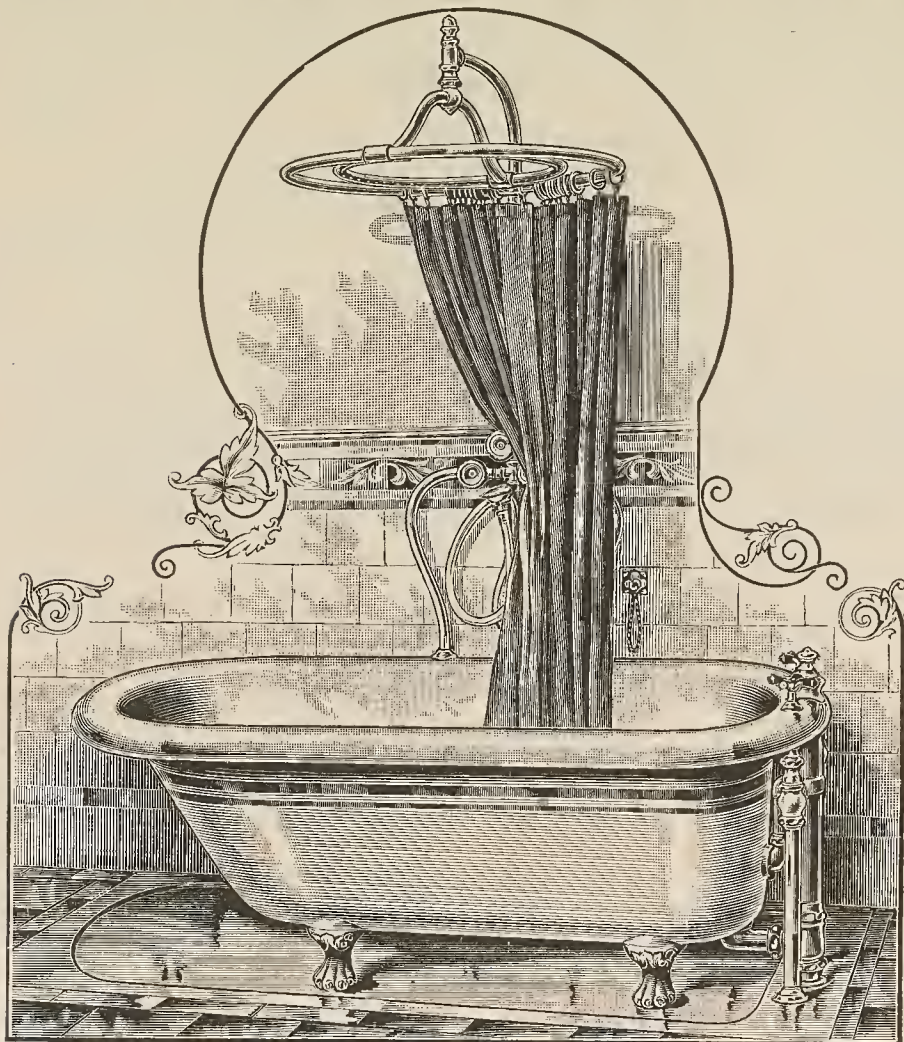
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# THE INLAND ARCHITECT AND NEWS RECORD

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## ARCHITECTURE, CONSTRUCTION, DECORATION AND FURNISHING IN THE WEST.

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### Thirty-first Annual Convention A. I. A.

The thirty-first annual convention of the American Institute of Architects, which was held at Detroit this year, and fully reported in this number, seems to have been productive of little except routine work in the general way. The report of the Committee on Revision of Constitution and By-Laws proved a very excellent scheme for placing the Institute in an advanced position for the accomplishment of its purposes. It has, of course, its objectors, as there are members in the Institute, and among them some of the most talented architects in the country, who would like to see the association a body representing the "aristocracy" of the profession only. That this would not be even advantageous to the members within, nor just to those without the defined lines, need not be demonstrated. The only successful plan for the advancement of architecture and the concerted endeavors of its votaries lies in an association that holds within its doors the obscure as well as the prominent, the honest practitioner in the small town, as well as the not more talented, perhaps, but better-known architect of the great city. The Institute to accomplish this does not need a complicated code or a stringent and arbitrary set of rules. In fact, the practice in the United States covers so varied a field that it is impossible to harmonize the entire profession under any but the most general and elastic laws. It is in this direction that the committee has sought to turn the rules governing the Institute in their report, and those in charge were selected because of their wide knowledge of the needs of the profession in the different localities. The report may be altered and amended in details, but the general scheme of State bodies affiliated with the national organization must be preserved. Members in giving it the further consideration granted must look at each provision from the standpoint of the whole profession rather than that of what may best suit those members in a particular section.

### Pennsylvania State Capitol Competition.

The action taken by the American Institute of Architects at the late convention in regard to what is known as the Harrisburg competition, was timely and dignified. If its attention had not been called to the matter by individuals who sought an expression of judgment, it would still have been a proper subject for discussion on the action of those who broke faith with members of the Institute in so flagrant a manner condemned as unsparingly. It is now certain that reputable architects will studiously avoid a second competition, and the State will congratulate itself that the appropriation was so much smaller than it might, or under proper control should have been. The situation now seems to be that either the whole matter will go into the courts and be regulated upon the basis of a breach of contract, or else the commissioners will dominate and select their own architect, and instead of a \$500,000 building there will be erected one that will cost millions, and be a source of financial robbery and political contention for years to come. To stand by the action of the commissioners will disgrace the State; to fail to act promptly and sustain the governor will be expensive as well as unjust.



## THE BEST FIREPROOF CONSTRUCTION FOR BUILDINGS OCCUPIED FOR MERCANTILE PURPOSES.\*

BY W. L. B. JENNEY, ARCHITECT.

SERIOUS loss in great stores during the past few years has created an intense interest among owners, underwriters and architects, as to the available methods for protection and their relative merits. This is the subject of my paper.

First, we will consider the conditions that usually obtain. The great department stores are necessarily of large capacity—several stories, each floor of large area. The effect or the impression that the store makes upon customers is in proportion to the unobstructed area. This and convenience of business make subdivisions or cross walls undesirable in these retail stores, and, notwithstanding the reduction in insurance rates, amounting to a considerable sum on the large amount of property, such walls are exceptional.

The contrary is the case in the wholesale stores where there is no attempt at display. The business itself is divided into departments with different clerks, so that the separation of the building

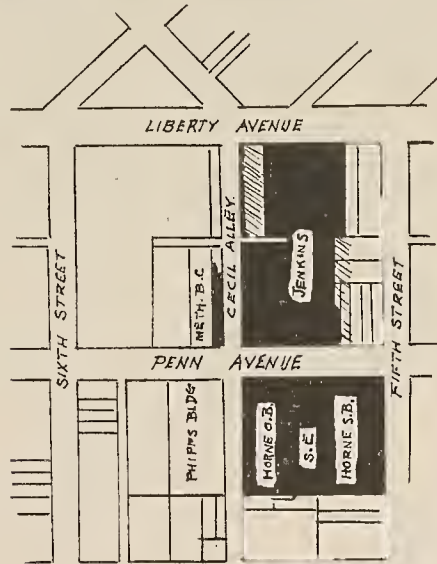


FIG. 1.

From *Insurance World*.

by walls is not at all objectionable. In the retail store the shelving for the display of goods is not allowed to exceed a reasonable height because it would have the same effect as cross-walls, of dividing the store. In the retail store the goods are all out of the cases and piled loosely on wooden shelves. This, together with the large areas, makes the retail store rather more hazardous than the wholesale.

In the great fire of last May in Pittsburgh, a large fireproof store was subjected to very trying conditions, the entire stock burning on several floors at the same time and intensified by the great heat from a raging fire, the burning of a large wholesale grocery store across the street to windward. This fire presents the most practical lessons that exist of the behavior of a fireproof building under the most trying conditions. Fortunately this fire has been very carefully and exhaustively reported by able experts employed as appraisers. These reports have been published in full in the *Insurance World* of May 8, June 1 and July 1. Fire records alone are conclusive and as these reports are the basis of my argument we will, if you please, make some extracts therefrom, as I shall have occasion to refer to them repeatedly.

Referring to the map of the burned district—Fig. 1. On the morning of May 3, the Jenkins building, a great wholesale grocery store filled with goods more or less combustible, some of them exceedingly so—such as oils, hams, bacon, sugars, etc., that make a very hot fire when once thoroughly ignited—was found to be in flames. The building is reported to be what is known as "mill construction" without any subdivisions. When the fire was raging furiously the street wall on Penn avenue fell. The Horne store building, across the street a little diagonally, was of modern steel construction, each story carried independently on the columns. It was six stories high above the sidewalk; the street fronts were some sixty per cent plate glass; the piers being simply steel columns fireproofed with masonry.

Instantly following the fall of the wall of the Jenkins building, all the plate glass in the Horne store disappeared from the sash and the stock was set on fire over the entire building and burned furiously. Across Penn avenue opposite the Jenkins building was the Horne office building, four stories high, the two lower stories occupied as stores. Across Cecil alley from the Horne office building was the new Phipps building, eight stories high, of steel fireproof construction, designed for an office building, recently completed, but at the time not occupied. Immediately across the alley from the Jenkins building was the Methodist Book Concern building of modern construction but with partitions of wood studding covered with expanded steel lathing and plastered, which wherever exposed to the heat was badly damaged, the result of which shows that any woodwork in such a building is a mistake. On the roof of the Horne store stood a

water tank weighing some twenty-six tons when filled. This tank was located directly opposite the elevator shaft where naturally it was particularly exposed to the heat. The supports gave way and the tank was precipitated through the building to the first floor, carrying with it the columns and beams with which it came in contact, causing the greater part of the injury to that building.

The engineer experts, Gustave Kaufman (consulting and contracting engineer), Emil Swenson (general superintendent Keystone Bridge Works), F. L. Garlinghouse (chief structural engineer Jones & Laughlins), employed by the appraisers to assist them, all men of large experience and high standing in the profession, made a very careful and exceedingly valuable report, published in the *Insurance World* of July 1, from which I quote.

According to the report, "but a few moments after the fall of the wall of the Jenkins building both the Horne office and store buildings became a mass of flames so fierce as to drive the firemen from Penn avenue and Fifth street to the roofs of the buildings surrounding the fire. The new Phipps office building was badly scorched and the Methodist Book building above the fourth floor was completely gutted of its contents.

"The two Horne buildings were reasonably well constructed and the fireproofing equal to the average. The engineers report that the general effect of the fire was the wreck of the eastern side of the Horne store building, caused principally by the falling of the water tank. After the fire they found a slight lateral movement had taken place in the Horne store building, although not sufficient to cause any injury to the steel; still, they attribute to this movement the scaling off of many of the lower webs of the floor arches and the dropping out of much of the fireproofing on the underside of the beams and girders. They believe, however, this latter is due, at least in part, to doubtful methods of attachment, which was thin strips of iron. The columns in the building were all carefully examined with a transit instrument and by plummet observations and close visual scrutiny. The greatest deflection found at any point in a whole tier did not exceed two inches. The girders and beams were also subjected to the closest scrutiny and a careful record made of each and every one. Every rivet in the building that was exposed was tapped and not one loose rivet was found. All connections were also examined and were all found in good condition as far as could be determined. Material that had been subjected apparently to the greatest heat was tested by cutting out test pieces as close to the bend as practicable. These tests were made exactly as is made for the new material—the elastic limit, breaking test, extension, reduction in area, the nature of the fracture, etc. In the opinion of the board the fire had not damaged the steel—that it had acted rather like an annealing furnace and that the material was rather improved than injured. The slight sinuosity in the various tiers of columns the engineer board does not attribute to the action of the fire alone, as possibly a small amount of it was caused by the setting, and existed originally."

This board makes its comments on the lessons taught by the fire as follows:

"First, in buildings of about this height the distortion of the steel framework due to the heat of the fire cannot in any instance be sufficient to work any serious damage, nor is it probable that at

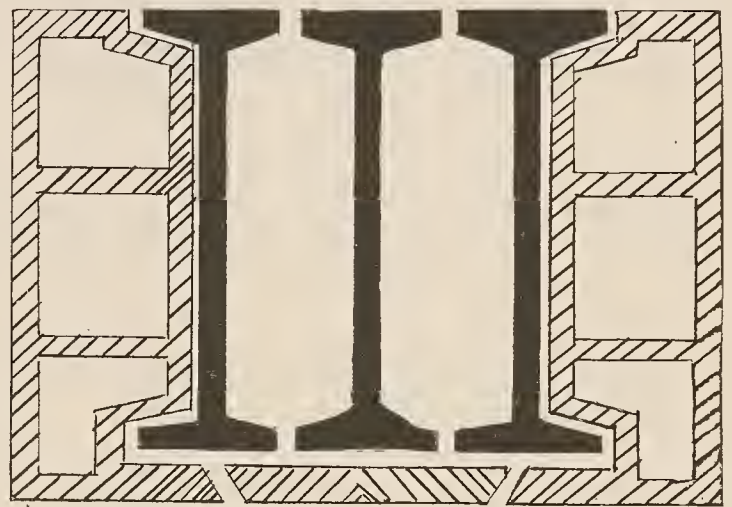


FIG. 2.

any time would connection rivets be sheared off. This conclusion is arrived at for the reason that there is no probability that any future fire will be fiercer than the one at issue.

"Second, the method of fastening fireproofing to the underside of beams with sheet-iron strips should be discarded.

"Third, it cannot be too often reiterated that open front buildings like this should be protected from external fires by metal shutters."

In this I fully concur. Rolling steel shutters, such as those in use in Marshall Field & Co's wholesale store on Adams street in this city, can be readily applied to the front of a building without detriment to its architectural effect. They are easily worked. If closed every night, as in that store, they are always in order. On the rear and alley elevations the ordinary standard shutters are all sufficient. In the Pittsburgh fire wooden shutters covered with tin did good service and assisted materially in stopping the

\* Paper read before the Chicago Fire Underwriters' Association, September 29, 1897.



fire. The engineers also further advise "that all shafts should be provided with metal doors that can be readily closed from all floors." This is attended with serious difficulties. In many of the large department stores there is a central light shaft of considerable dimension. No satisfactory arrangement has as yet been put on the market for the closing of these large openings at each story. Even in the smaller openings of staircases, the doorways in use are scarcely adapted to retail stores. They can, however, be shut off by vertical rolling shutters between stories so that the light shaft becomes a chimney for the escape of the smoke.

"Fourth, the most important lesson taught by this fire was the lack of strength displayed by the fire-clay fireproofing. The building was permitted to move in any direction without any

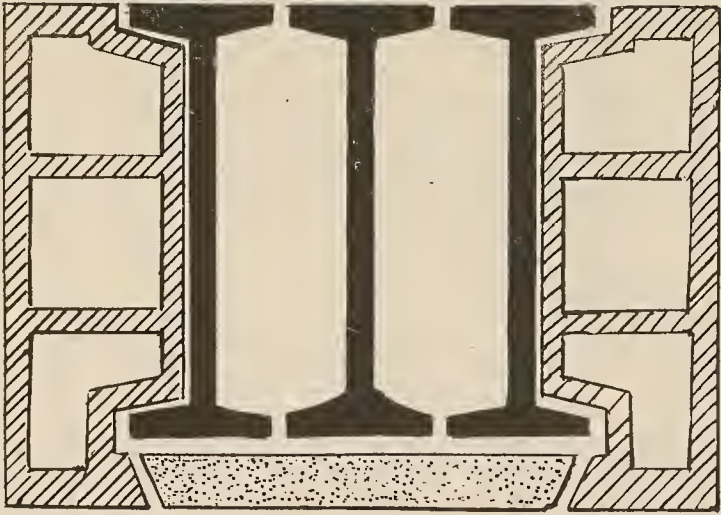


FIG. 3.  
From *Clay Worker*.

material restriction by the fireproofing. The floor arches showed by the scaling off of the lower webs that they were unable to offer any sufficient force to counteract the tendency to lateral motion.

"Fifth, the column protection, although composed of the very best obtainable kind of fire-clay tile, was also not of sufficient strength.

"In our opinion it would have been necessary to dismantle the whole steel framework had this structure been fourteen or fifteen stories high. The leaning at that height at the same proportion as developed, would have entailed the necessity of taking the whole structure down.

"Owing to the fact that steel columns or girders or beams, after being subjected to a long-continued fire, will assume the same temperature as fireproofing, and owing to the fact, furthermore, that the rate of expansion of the steel is much greater than that of the fire-clay tile, destructive movements are permitted which, as shown in this experience, will result in considerable damage, and which damage will increase in direct proportion to the height of the building.

"In view of these important developments, it is our opinion that important structures of this class should have a radically different method of fireproofing. The fireproofing should be in itself strong and able to resist severe shocks, and should if possible, be able to prevent the expansion of the steelwork.

"There seems to be but one material that is now known that could be utilized to accomplish these results, and that is first-class concrete. The fire-resisting qualities of properly made concrete has been amply proven to be equal to, if not better than, fire-clay tile, as shown by the series of tests carried on by the building department of the city of New York.

The *Engineering Record* of September 18, 1897, states that in the Denver test a floor made of end-construction porous terra cotta endured eleven alternate applications of fierce flames and cold water, lasting twenty-three hours, and finally endured a twenty-four hours' continuous fire test, and afterward sustained a load of 12,500 pounds, which seems quite satisfactory—still, personally, all things considered, I would give the preference to concrete.

"From the experience gained in street railway construction in laying continuous rails, it is to a large degree possible to prevent the metal from expanding. In street railway work this has been accomplished merely by the adhesion of the pavement to the side of the rails. In building construction the same results could be obtained by incasing the columns and girders with concrete placed directly against the steelwork. The adhesion of the concrete would to a large degree prevent unequal expansion of the concrete and steel. The floor arches should also be constructed of concrete, but of sufficient depth to be able to resist lateral forces, which, except during a fire, are principally wind pressure. By the use of such floors with the prevention of injurious expansion and the protection of columns with materials that can stand severe shocks of any nature whatever, the modern steel frame constructed building would be most thoroughly protected against any fire.

"The construction herein suggested should not materially increase the cost of construction. The solid concrete about the columns would be added strength to same, and could no doubt be made self-supporting. The same could be said of concrete sur-

rounding beams and girders, as has been amply demonstrated by the strength developed by concrete iron constructions.

"As so-called fireproof buildings are not equally and to the same degree protected against fire, we would recommend to the insurance companies that they should vary the rate of insurance for this class of buildings, depending upon the character of the fireproofing used. The competition between fireproofing companies has been so severe as to reduce the price of their output, in very many instances, at the expense of quality. The large fire loss in the Horne building would still have been larger had the fireproofing been of poor quality; and we would further recommend that the insurance companies have prepared standard specifications governing the character of the fireproofing and the construction and putting up of same, and requiring owners of buildings to use fireproofing subject to these specifications, under careful inspection, or be subjected to higher insurance rates."

Before answering the question, "What is the best fireproof construction?" I will call your attention to another class of buildings known as "mill construction," much in vogue, particularly in St. Louis. The Chicago building ordinances permit buildings of this class to be 100 feet in height, as against 60 feet for common construction. The underwriters give them an advantage of rate indicating a less hazardous risk. Are these advantages justified by the facts? I think not. Mill construction as understood by the Chicago Building Department is thus described in the city ordinances: "The term 'mill construction' shall apply to all buildings in which all the girders and joists supporting floors and roof have a sectional area of not less than 72 square inches, and above the joists of which there is laid a solid timber floor of thickness not less than 3 3/4 inches. Wooden posts used in buildings of this class shall not be of smaller sectional area than 100 square inches. Partitions and elevator inclosures in buildings of this class shall be made entirely of incombustible material. If iron pillars, girders or beams are used in buildings of this class, they shall be protected as provided for fireproof buildings, but the wooden posts, girders and joists need not be protected by fireproof covering. The use of wood furring, wood laths or steel partition shall not be permitted in buildings of this class."

On March 15, 1897, there occurred a big fire in the heart of the wholesale district in St. Louis, a building occupied by the Ely-Walker Dry Goods Company. Quoting from the *St. Louis Democrat*, of March 16, "the loss will be close on to \$1,500,000. One life lost and several people hurt. The fire was one of the worst the St. Louis fire department has had to cope with for a long time, and for a time it looked as though there was to be a conflagration that would wipe out the Washington avenue wholesale district. The firm's enormous stock has been recently increased by large purchases of the finest lines of goods in the market, consequently every inch of available floor space was occupied by great piles of

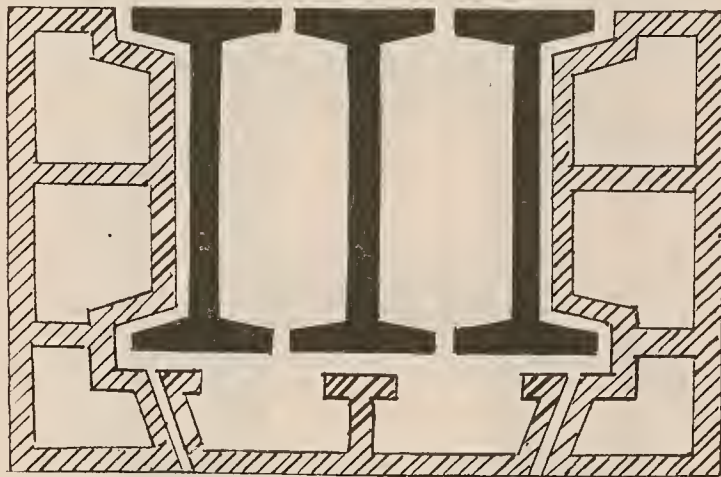


FIG. 4.  
From *Clay Worker*.

dry goods of every description for the spring trade." Desiring to obtain reliable information in regard to the character of the building burned, I wrote to W. S. Eames, of Eames & Young, architects. Mr. Eames replied immediately as follows:

"In regard to the recent destructive fire in our city, I beg to send you under separate cover two newspapers which contain very graphic and accurate descriptions of the fire, the amount of damage, the character of the contents of the building, etc. The fire began about half-past seven on Monday night, and while I am dictating this letter I can see from my window the engines still attempting to quench it. Portions of all of the walls remain, but the building is a total loss unless it be the foundation and the walls of the first and second stories. The building was not a fireproof building in any sense. It is what is known by the St. Louis Board of Fire Underwriters as 'a standard slow-combustion building.' I inclose a printed specification for such buildings as issued by our Board of Underwriters. The building in question complied with all of the requirements of this specification except as to area and height. The building is about 120 feet square and seven stories in height. It had three street fronts and a blind wall on the other inclosing side. The two principal street fronts were faced with Loug Meadow brown sandstone. It was one of the last works of the late H. H. Richardson, and was, of course, Romanesque in style. Of course, the stonework of the two street fronts was



principally ashlar, backed with brickwork. The building was constructed by Norcross Brothers, of Boston. The basement, first and second stories, I think, had cast-iron columns enveloped in fire-clay casings plastered. The remaining columns were of Southern yellow pine. The wooden girders, wooden floor beams and heavy planking were of long leaf Mississippi or Louisiana pine. The building was not equipped with automatic sprinklers, and to this defect is attributed the loss of the building and its contents. The stairways and elevators were inclosed in brick shafts with standard metal covered doors to all openings.

"The fire burned for about three hours, apparently entirely within the building. Then came a collapse (which probably was caused by the fall of the burned wooden posts) whereupon the fifth, sixth and seventh floors and the roof fell in and created an opportunity for a tremendous conflagration. The enormous mass of heavy dry seasoned beams and flooring made an irresistible fire with a heat of great intensity. The first, second and third floors are still in position, but of course the intense heat has damaged what remains of the walls, and the contents of the building are a total and irreparable loss.

"Most of the commercial mercantile buildings in this city have for the past seven or eight years been constructed upon the slow combustion principle, the reason being that the Board of Underwriters gives a rate on such construction that makes it profitable to the owner of the building as well as the occupant. Nearly all of the buildings in the Cupples block, of which we were the architects, are buildings of this type of construction. But special constructive features have been added to the requirement of the underwriters and the entire plant is thoroughly equipped with the very best system of automatic sprinklers."

The specifications of the St. Louis Board of Fire Underwriters for mill construction, although more in detail, do not differ materially from the Chicago City Ordinance which I have quoted. In these buildings there is no lath and plaster, hence no covered passages, so that the fire is entirely exposed to the direct action of the fire department. This is certainly an advantage at the outset of a fire. It also enables the fire department after the fire is well under control to entirely extinguish it. There is no opportunity for the fire partially extinguished to be hidden under lath and plaster and to break out later. To this extent the system is advantageous; but under the conditions to which the Horne building was exposed—the raging fire across the street to windward inflaming the goods in every story at the same instant—mill construction feeds the flames and causes a total loss in an incredibly short time. Several Boston fires, the Jenkins building

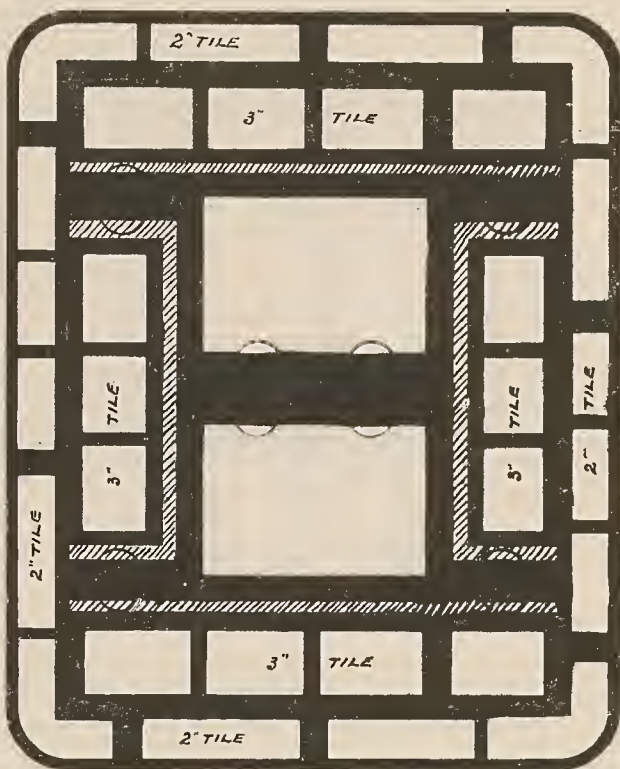


FIG. 5.  
Detail of Column Covering, Fair Building.

at Pittsburg, as well as the St. Louis fire, have shown that no advantage as against loss can be expected from this class of construction. The timbers add so much fuel to the flames after the fire is once under way. In these buildings we meet another difficulty. The long heavy timbers required for that construction can be obtained cheapest and easiest in Southern or pitch pine. Moreover, this material is usually considered to carry a heavier load than oak. Oak is safer from fire, but unfortunately cannot be obtained in requisite dimensions, and moreover costs about fifty per cent more per thousand than Southern or pitch pine, which can be obtained free from knots direct from the mills smooth-dressed to the sizes demanded, hence, this is the material usually employed for such buildings. This Southern pine, often called pitch pine, is, as its name implies, full of pitch. It is the most inflammable of all the usual building materials. The pitch distills out by heat and rapidly catches and spreads the fire with rapidity, so that the

usual so-called "slow-burning construction," a name so often used as a synonym for mill construction, is a misnomer, and offers no protection against the burning of a stock of goods beyond the ordinary common construction and is not entitled to any reduction in rate. Indeed, when pitch pine is used, I should be inclined to place this construction as extra hazardous, as the building could be set on fire by the burning of a newspaper or by a gas jet flaming against the wood. Such a fire once started usually feeds itself and spreads rapidly over the entire building. I also object to the use of Southern pine for the floors and interior finish of apartment houses as unnecessarily hazardous, for there is

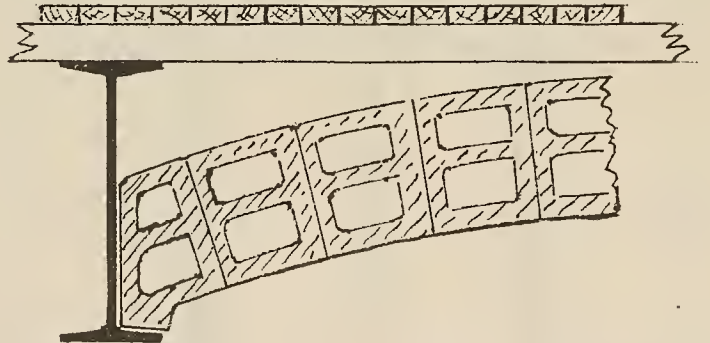


FIG. 6.  
Segmental Arch. Lower flange exposed. From Catalogue 177,  
T. C. L. Co.

no doubt but what pitch pine helps along a fire and greatly increases the loss above what it would have been had oak been used instead of the pitch pine.

The Jenkins building at Pittsburg is reported by the *Insurance World* as of mill construction. Also the store in St. Louis occupied by the Ely-Walker Company, and many of the Boston buildings.

We now reach the question under discussion, "What is the Best Fireproof Construction for Buildings Occupied for Mercantile Purposes?" As recommended in the Appraiser's report (*Insurance World*, July, 1897), "the first requisite is a good foundation," which in Chicago means that the loads shall be uniformly distributed; that is to say, the load upon each footing shall be carefully calculated, taking into account the weight of the building and the load within—that is, all the load that will come upon said footing. Then make the size of the footings so that the load per square foot shall be the same in every instance throughout the building. This load should not exceed 3,500 pounds per square foot; for should this load be much in excess, owing to the compressible nature of this clay under the footings, the settlement will be so great as to be inconvenient, and moreover continues too long; besides, it increases the difficulty of obtaining an absolutely uniform settlement. With the load designated, the total settlement should not exceed three inches, which should be allowed for, and should cease entirely by the end of the first year after the building is fully occupied. Any unequal settlement is not only a disfigurement to the building, but it causes a movement in the fireproofing that may be equal to a disarrangement, loosening the flange protection of the beams and girders so that they will fly off as soon as touched by a stream of water.

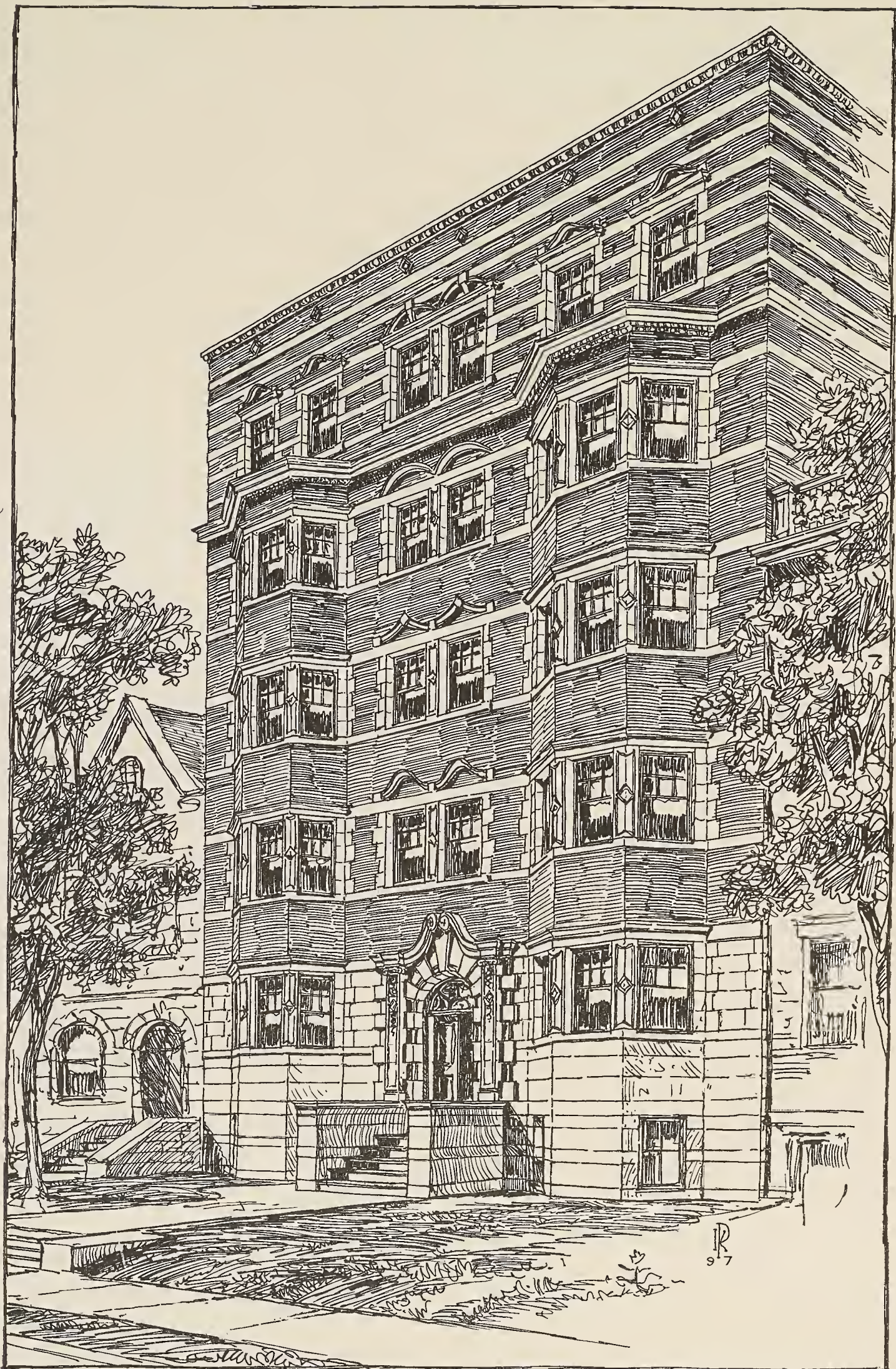
Second, fireproofing. This should be much more substantial than what is at present in general use. The recent fires have demonstrated that it is not difficult to protect the steel from injury; that fireproofing as usually constructed protects the steel, but is itself usually destroyed, causing serious loss. The material should be carefully tested by heating to redness and plunging into water, repeating the test five or six times. If it flies to pieces it is worthless. What is known as soft porous terra cotta, if the clay is good, usually stands well. This is manufactured by adding six parts of sawdust to four parts of fire clay. On burning, the sawdust is consumed and furnishes a tile full of air-holes or little cells, rendering it impossible for any hurtful heat to penetrate to the metal. The weakest part in the usual fireproofing is the protection of the soffits of the beams and girders. As usually constructed they are like (Fig. 2) a long weak flange on either side, holding, in a dovetailed manner, the soffit tile. The tile are also too thin and too close to the flanges of the metal beam. This is a serious fault, because the soffit is the very surface which has to resist the intense heat and action of the fire from the burning goods below, and is exposed to the direct force of the water.

In the *Clay Worker*, of April 18, 1897, I find in the report of the proceedings of the last convention of the brick manufacturers at Buffalo, New York, a discussion of this subject. Mr. Gates, president of the American Terra Cotta Company, of Chicago, condemns the arrangement of Fig. 2, where the soffit tile, only one inch thick, is placed close to the flanges of the beams and only supported by the long weak flanges of the side tile. Mr. James Taylor (Fig. 3) made a diagram of a method he suggested which would overcome the dangerous method of Fig. 2, so justly condemned by Mr. Gates. He proposes a porous terra cotta flange two inches thick (Fig. 3), supported by short strong flanges on either side. By this method the whole surface of the metal girder is covered with a nonconducting material which has absolutely no liability to crack or break under the most severe differences of temperature. The short flanges on either side reduce the liability of cracking or breaking to a minimum, and the additional thick-









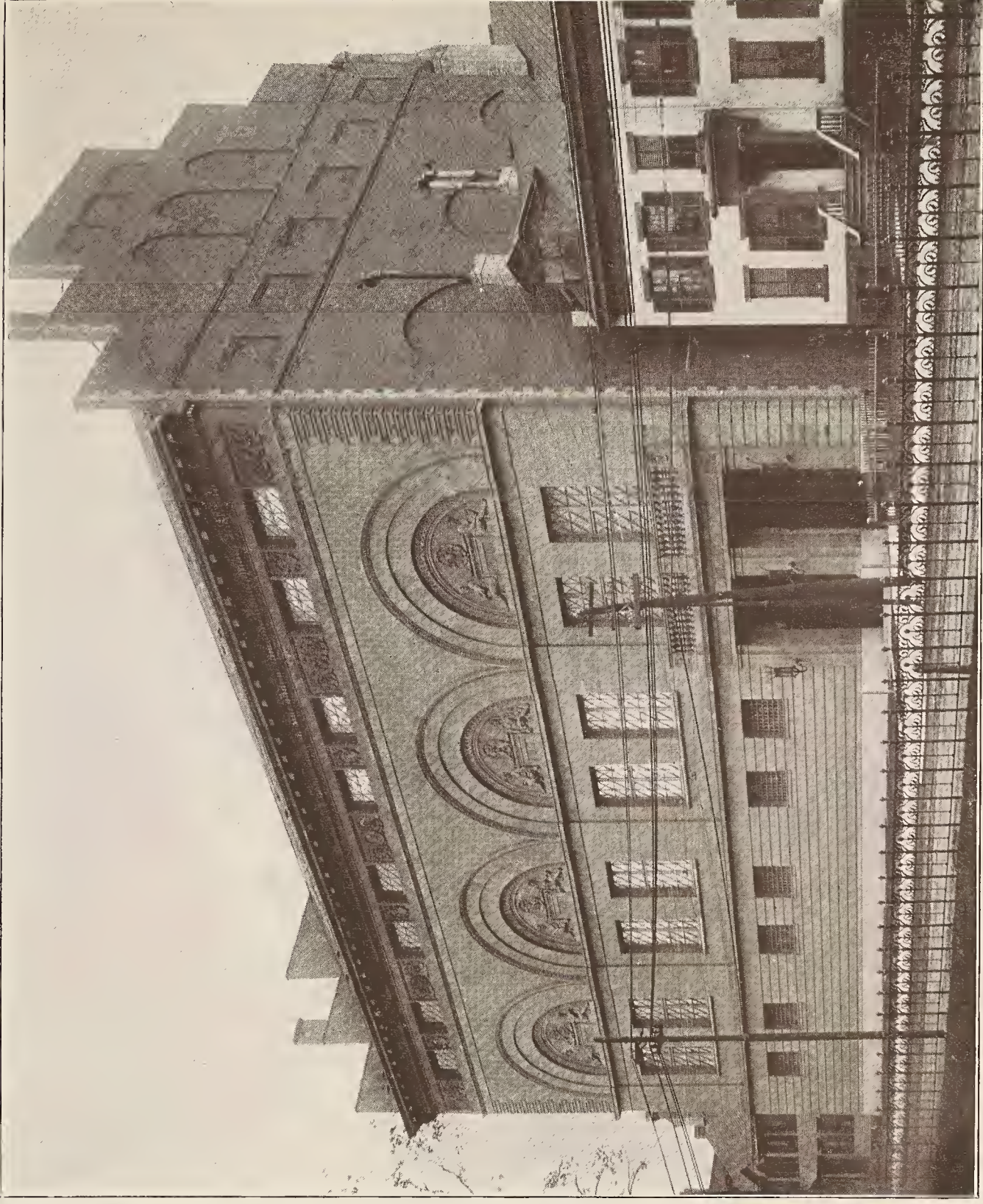
APARTMENT BUILDING FOR MR GEORGE P CARY

POND & POND ARCHITECTS.







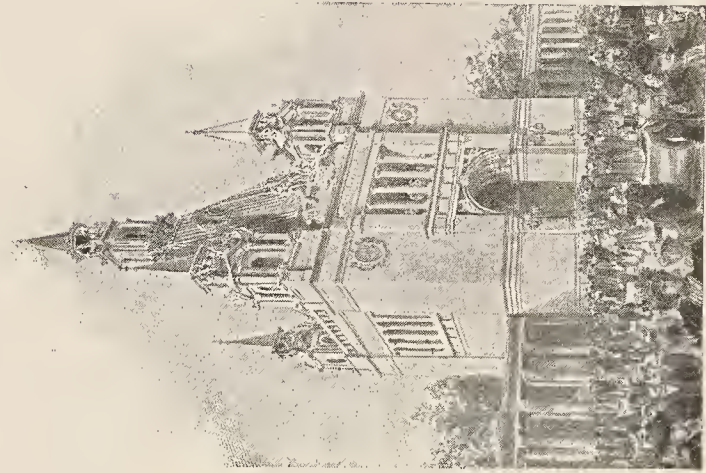


GYMNASIUM, YALE COLLEGE, NEW HAVEN, CONNECTICUT.

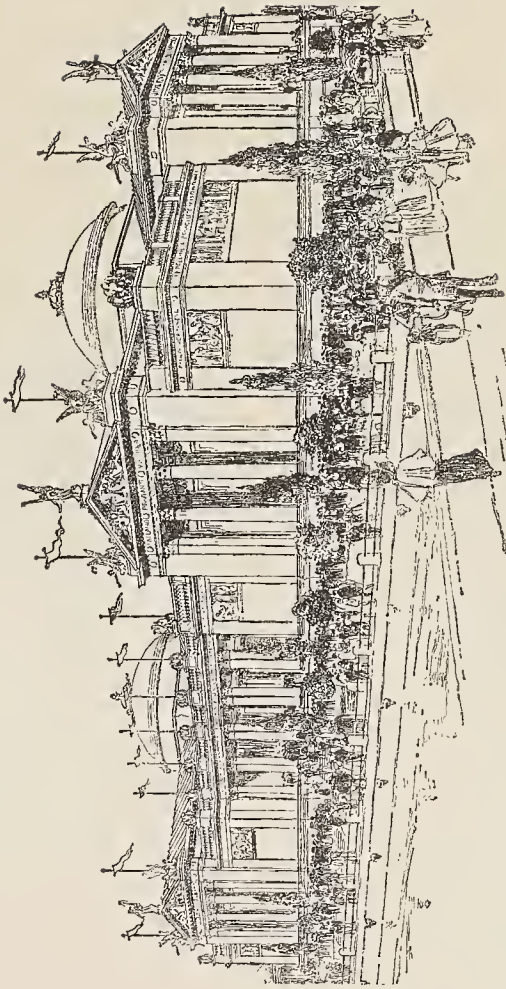




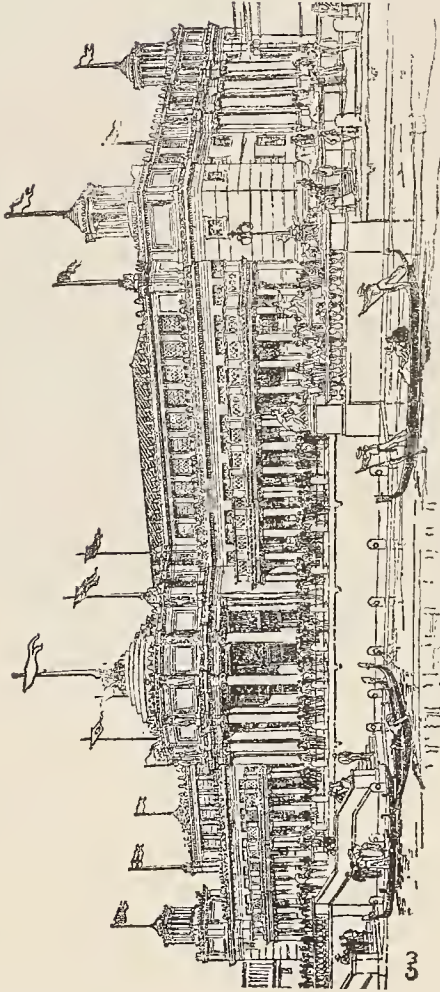




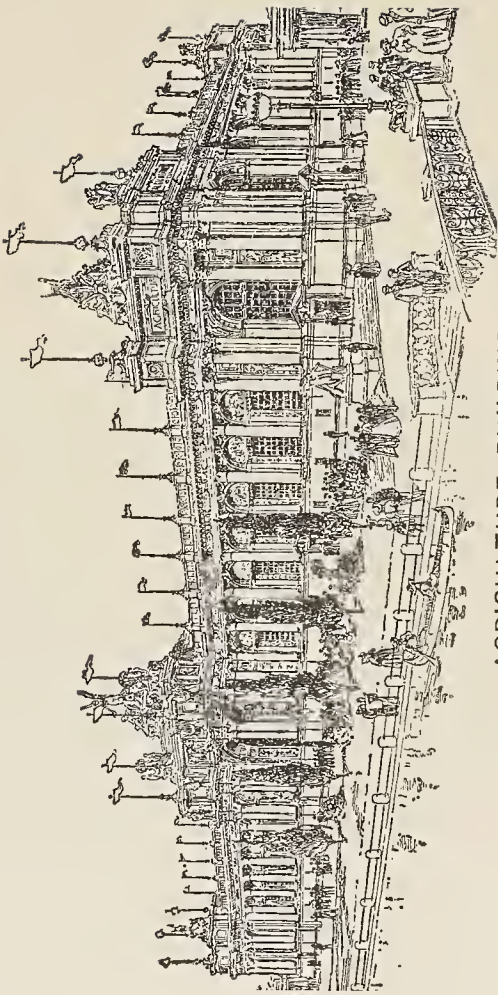
ARCH OF THE ADMINISTRATION.  
WALKER & KIMBALL, ARCHITECTS.



FINE ARTS BUILDING.  
EAMES & YOUNG, ARCHITECTS, ST. LOUIS.



MANUFACTURES BUILDING.  
S. S. BEMAN, ARCHITECT, CHICAGO.



AGRICULTURE BUILDING.  
CASS GILBERT, ARCHITECT, ST. PAUL.

BUILDINGS FOR TRANS-MISSISSIPPI AND INTERNATIONAL EXPOSITION, OMAHA,  
JUNE TO NOVEMBER, 1898.









FIRST NATIONAL BANK BUILDING, NEW HAVEN, CONNECTICUT.

L. W. ROBINSON, ARCHITECT.









THE PRUDENTIAL ASSURANCE COMPANY'S OFFICES, NOTTINGHAM, ENGLAND.

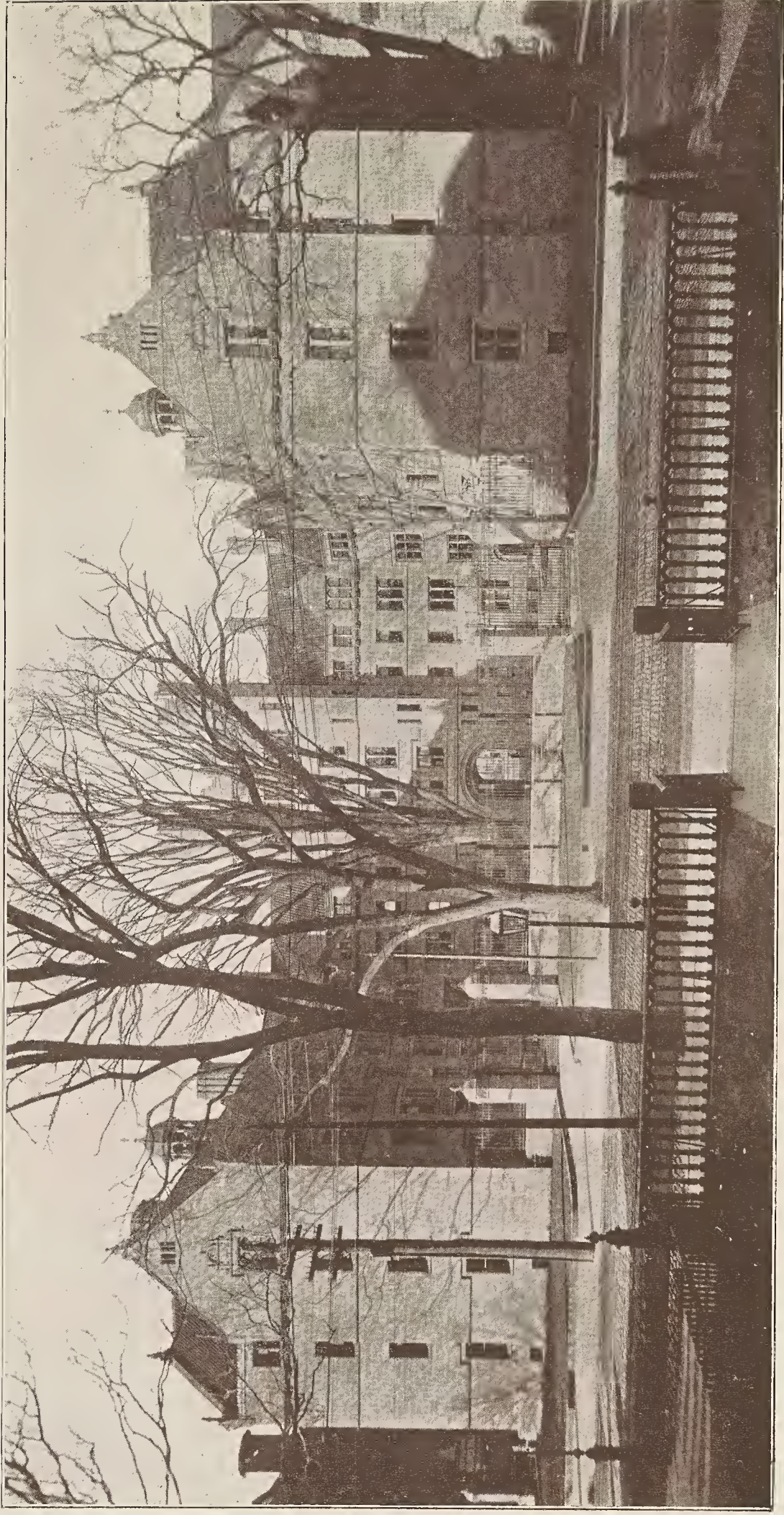
*From The Builder.*

A. WATERHOUSE, ARCHITECT.





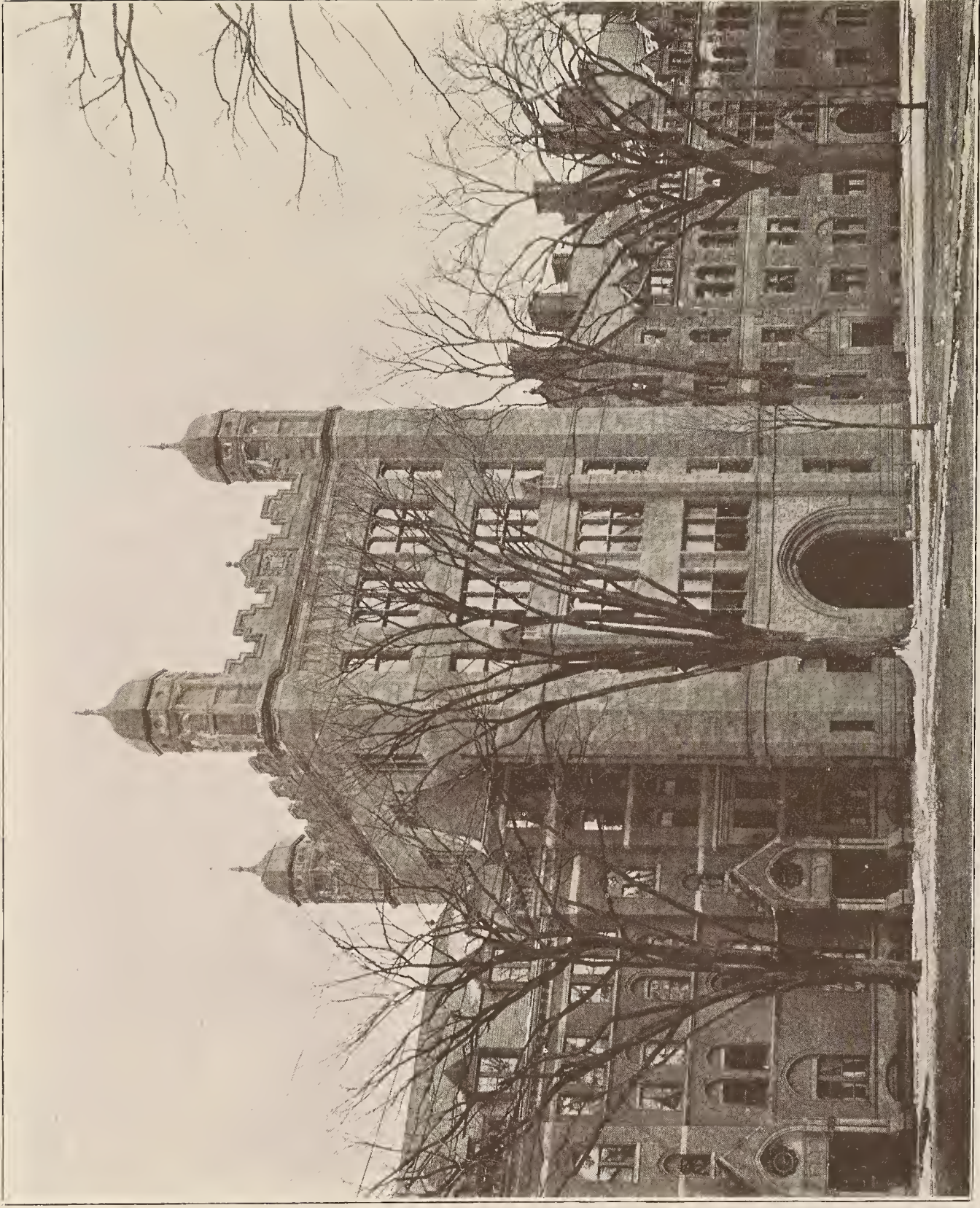




VANDERBILT MEMORIAL BUILDING, YALE COLLEGE, NEW HAVEN, CONNECTICUT.

CHARLES C. HAIGHT, ARCHITECT.



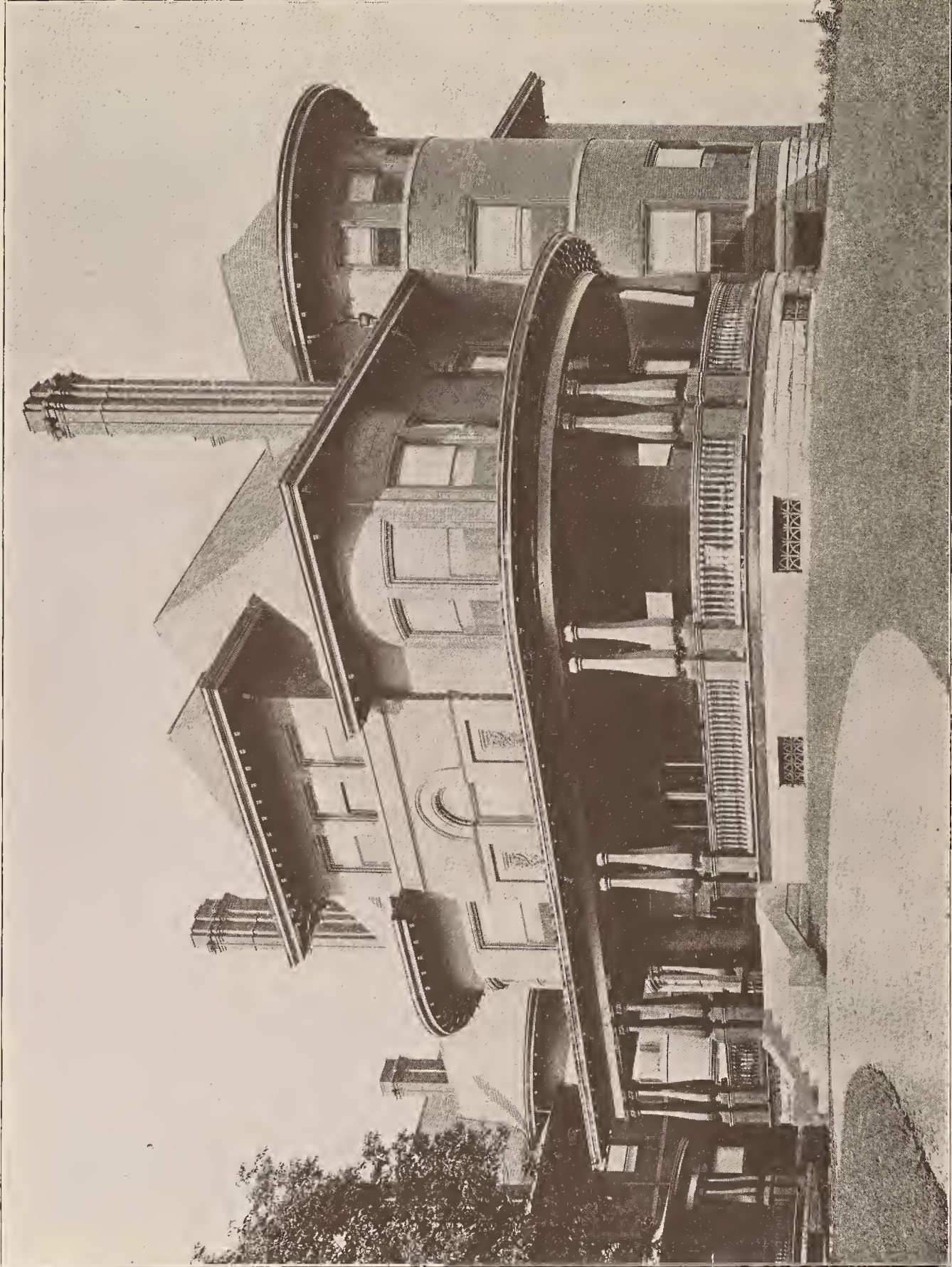


PHELPS HALL, YALE COLLEGE, NEW HAVEN, CONNECTICUT.









RESIDENCE OF MR. DURRELL, CINCINNATI, OHIO.  
DES JARDINS & HAYWARD, ARCHITECTS.

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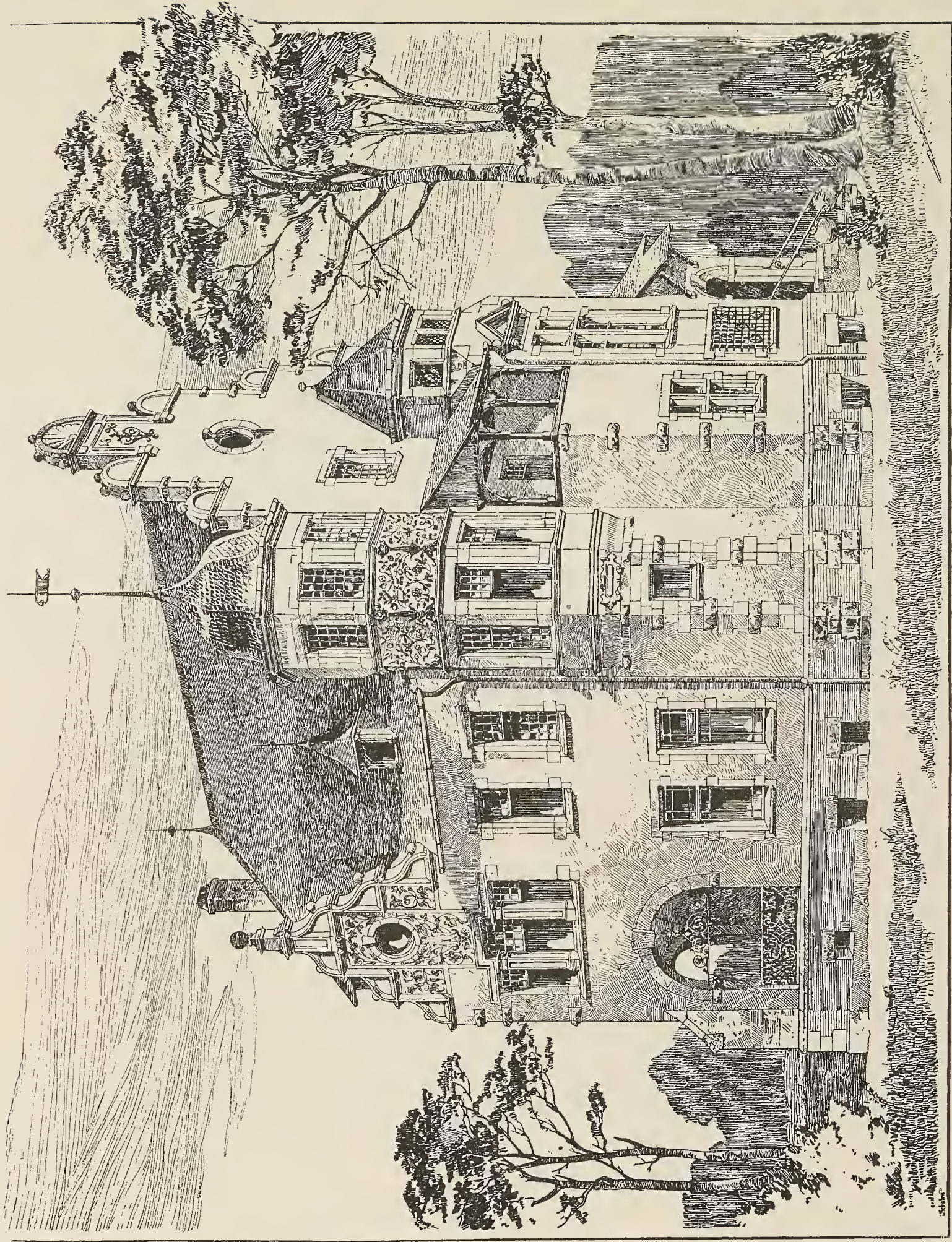


BUILDING AT NEW HAVEN, CONNECTICUT.









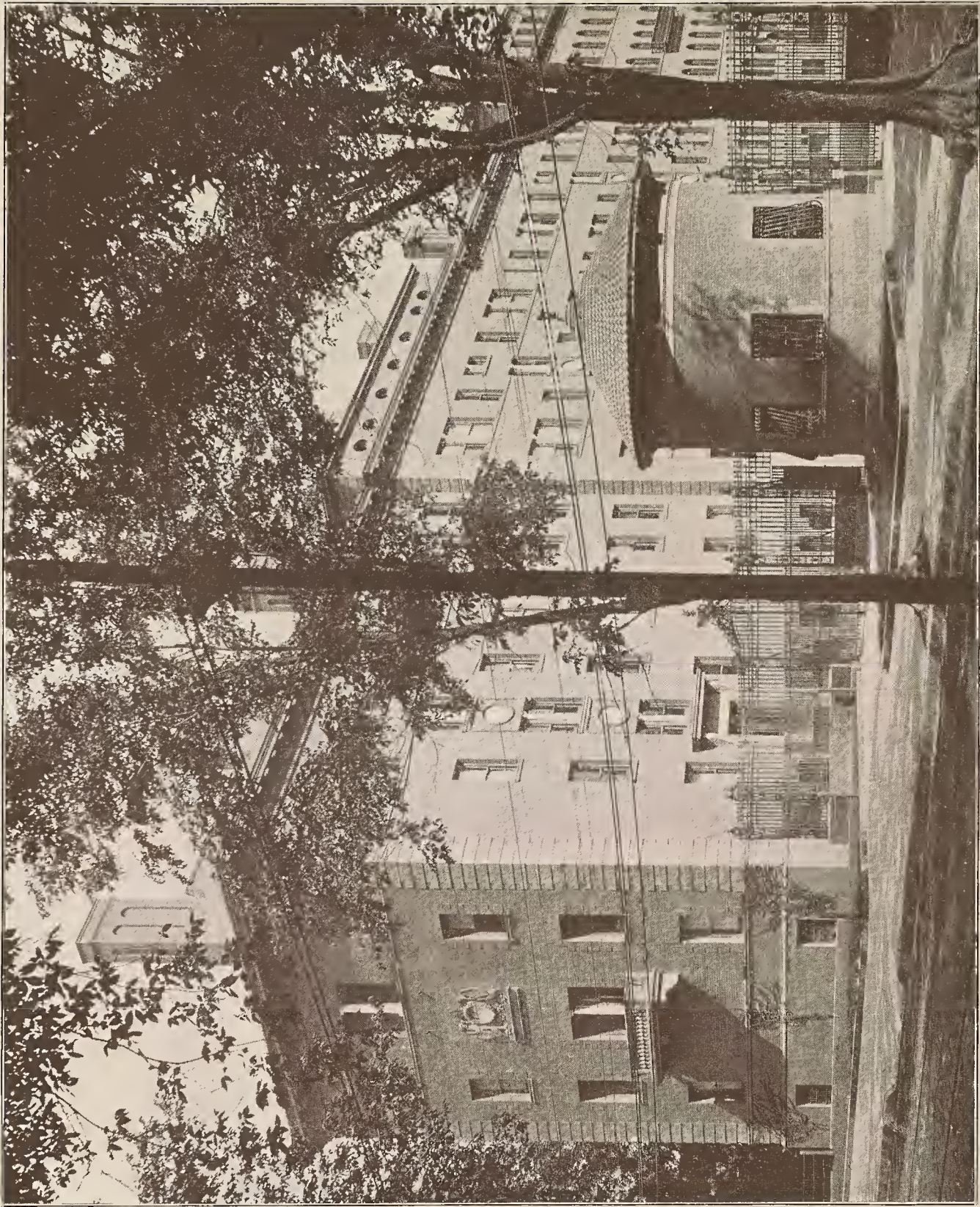
VILLA ARONS, NEAR BERLIN, GERMANY.

H. SOLF, ARCHITECT, BERLIN.









DORMITORY BUILDING, YALE COLLEGE, NEW HAVEN, CONNECTICUT.

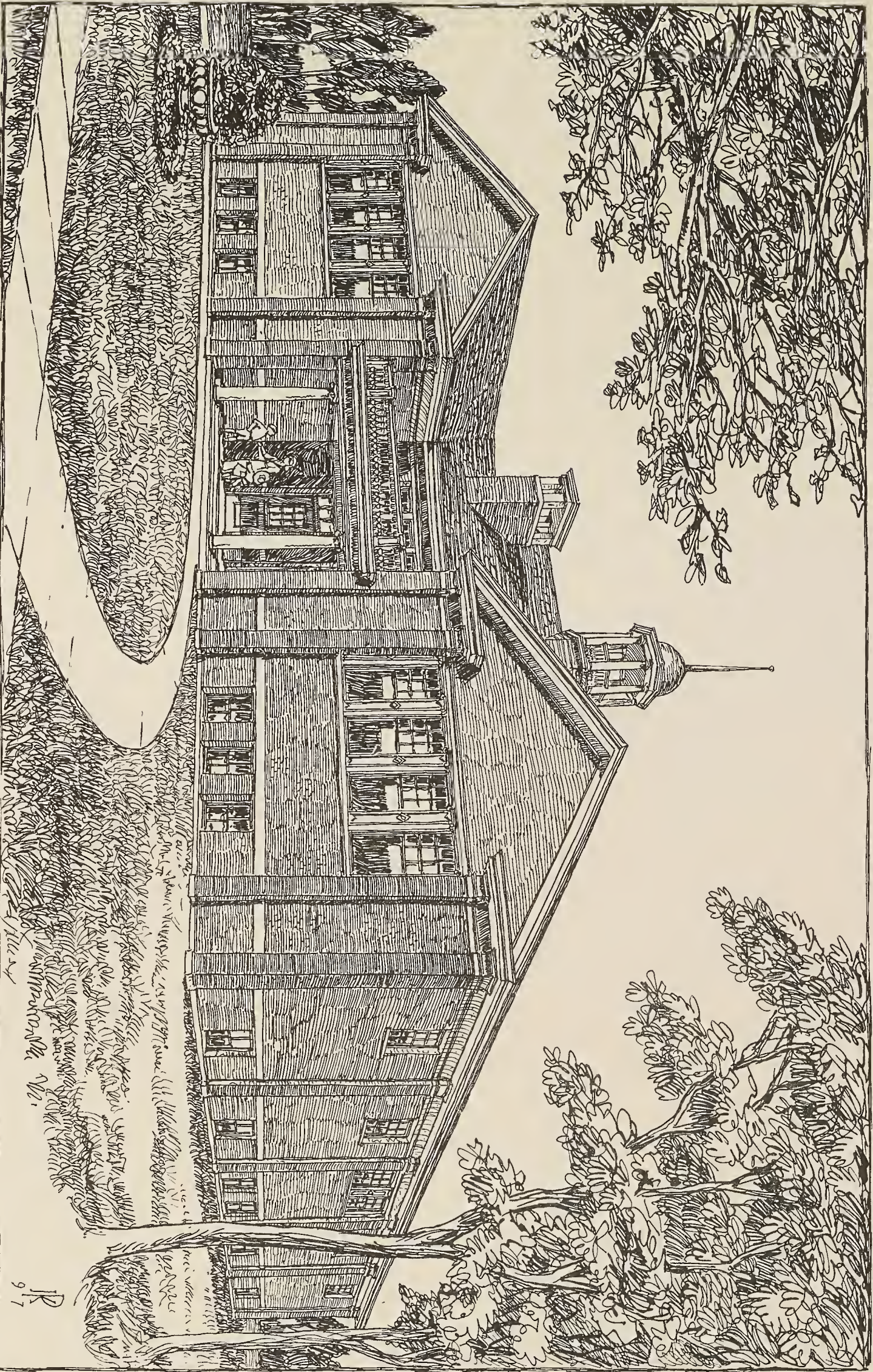






PRIMARY SCHOOL BUILDING AT LAKE FOREST ILLINOIS

POND & POND. ARCHITECTS CHICAGO.









ness affords additional solidity without much increase of weight and greater ability to resist the action of heat and water. (Fig. 4.) Mr. Gates showed how the terra cotta could be used in a double capacity: as a fireproofing protection and as an exterior finish when metal girders are used projecting from exterior walls. Moldings can be added at pleasure. Care must be taken in dimensions and shapes in order that the side flanges shall securely hold the soffit tile, so that it cannot escape or be knocked out by a stream of water. The floor arches should be very substantial, and what is known as "porous" and "end construction" is recommended. The laying of the terra cotta is very essential. Common lime mortar should be discarded as unfit for the purpose, and good Portland cement mortar should be used, adding only sufficient lime mortar to make it work freely under the trowel. Every joint should be filled with mortar over the entire surface and the tile crowded close together. In putting in the key, unless it fits closely, slabs of tile covered by cement mortar should be forced into the joints. It is very essential that these tile floors should be very rigid, as by so doing they prevent the lateral movement of the building not only in case of fire but as against high winds. If this work is well done, they will take up a material portion of the wind pressure even in a building of moderate dimensions. In most of the fires that have occurred in fireproof buildings very serious damage has been done to the floor arches by scaling off of the lower web, necessitating the replacing of the floors at an expense even greater than first cost. Concrete on top of the floor arches should be of good quality, not inferior to that used in sidewalks, and when practicable should form the floor, so as to avoid wood floors. Soft coal cinders should not be used. Crushed slag of the blast furnace is far better; it is full of air cells, and being produced at very high temperature, is not affected by any heat likely to obtain. The column protection is another detail that should receive the most careful attention, for the columns are the

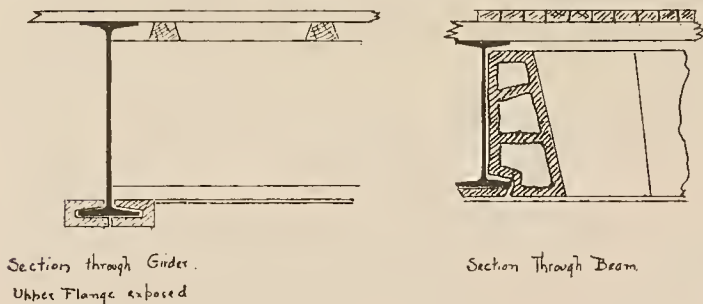


FIG. 7.

main supports of all that are above, and if a single one should fail it brings down all that there is directly above it and the loss is necessarily very serious.

At the Fair building the columns are doubly protected (Fig. 6), so that should the outer layer of terra cotta be knocked off, the column would be sufficiently protected by the second layer, which would be sufficient to resist the heat and prevent any serious injury to the column. For round columns there can easily be two layers—the inner one should be bound on firmly by wires or wire netting, which, lying close against the terra cotta, is itself protected. That this is the case can easily be shown by tying a piece of sewing cotton tight around a lead bullet and holding it in the flame of a candle; the lead will melt before the string burns off.

The Chicago City Ordinances demand, in cases of buildings devoted to the sale, storage or manufacture of merchandise, that the covering of columns shall be of brick not less than 8 inches thick, if of hollow tile these coverings shall be in two consecutive layers, each not less than 2½ inches thick; if of porous terra cotta, it shall consist of at least two layers, each not less than 2 inches thick; each course breaking joints and to be so anchored and bonded in itself as to form an independent and stable structure. If this is carried out in a proper manner the protection is all that is necessary.

The recent fires have demonstrated that steel is more easily protected than is usually thought—for example, beams in the condition of Fig. 7; that is, with the lower flange entirely exposed on the ceiling where it is subjected to the greatest heat in case of fire. These beams have gone through a severe fire without injury; still, Mr. H. B. Seely in his paper on the "Art of Fireproofing," published in the *Engineering News* of April 9, 1896, theorizes that a beam in this position is liable under heat in case of fire to sag on account of the lower flange of the beam being heated to a considerable degree more than the balance of the beam to such an extent that the arches might drop out. Mr. Seely is undoubtedly correct in this theory. Still, I can find no example of such a serious accident in the reports of any of the fires, which is our only practical test; still, as the expense of protecting the lower flange is so small, this omission is not to be recommended.

The limit by law in height of buildings makes it desirable not to take more than is necessary for the thickness of floors, so that the top flange of girders or beams for convenience is often left uncovered. To this there is less objection. The top surface of the flange of a beam is such a small part of the whole and so far removed from the mass of the steel that when the entire balance of the beam is thoroughly fireproofed no heat that can be produced by the burning of the goods on a floor above will seriously injure the beam. Moreover, the floor is protected by the goods and deluged by the fire department, so much so that there are

records of fires in ordinary wooden joist buildings where the floors fell from the burning off of the joists and from falling walls, and after the fire was out considerable areas of unburnt floor were found in the basement, still covered by partially consumed goods, so that, when convenience demands, it is not very objectionable to adopt the construction shown in Fig. 7.

For partitions the ordinary 3-inch or 4-inch tile the Pittsburg fire shows to be a disappointment. They do not stand any better than wood studding covered on both sides with wire lathing and plastering. Indeed, it is reported that the firemen stated that the hot tile partitions appeared to dissolve and fly into powder as the water struck them. The appraisers noticed that the amount of debris around partitions where considerable portions had been knocked down, was very small.

From these fire tests it is probable that very satisfactory partitions can be made by steel tees or anchors set vertically, secured top and bottom, covered on both sides by the metal lathing and fireproof plastering (asbestos). Still greater security could be obtained by filling in between lathing with asbestos. A superior partition is made of concrete stiffened by twisted square rods (Ransome system).

The lower six or eight feet of all columns should be protected against damage from shocks by a substantial covering of sheet metal, as boxes of goods are piled up against the columns, and they are also subject to be scraped by passing trucks. This outside metal covering will render it impossible for the fireproofing to be stripped off during a fire. There is a still further protection to the columns that I would strongly recommend, which is the filling of the interior of each column with good Portland cement concrete rammed into place. This will protect the interior against rust, and materially strengthen the column as against bending in case of severe fire. This was done in the first nine stories of the Home Insurance Building in this city.

In the *Engineering News* of May 20, 1897, is published an excellent paper on the "Lessons to be Learned from the Pittsburg Fire," from which I extract the following: "Passing to a consideration of the damage done by the fire to the more purely structural features of the several buildings, one is impressed at once with the splendid showing made by the steel frame. Not a single steel member can be said to have been torn from its position in the structure by the heat of the fire or the destruction of its protecting fireproofing. In the Horne store buildings at least 50 per cent of the columns and floor beams were found partially or wholly uncovered, but only slight bends were found in two or three columns. The thing responsible for the damage to most of the injured steelwork in this building was the fall of the heavy steel water tank from the roof. The constructional steelwork in the Horne office building showed no injury except for occasional bent floor stringers, and that in the Methodist Book building did not seem to be injured at all. Concentrated loads on the roof like an inclosed steel water tank should be avoided. When a necessity, the supports should be very substantial.

"A particular feature to be remarked is that no particular part of the fireproofing seemed to resist the fire better than another; the column tile, the floor arches and the beam flange covering seeming to have been destroyed about equally. In the office building, where partitions were used, their destruction was pretty serious, as might have been expected. No very great stability against fire and streams of water can be expected from partitions of 4-inch tile, and the wonder is that they stood as well as they did. In respect to their efficiency, however, there does not seem to be much choice between partitions of 4-inch tile and metal lath and wooden stud partitions used in the Methodist Book building, and the builder who pins his faith to either to resist a severe attack of fire and water, is likely to be disappointed.

"The behavior of the 16-foot span concrete floor arches in the Methodist Book building must, we believe, be conceded by every fair-minded man to have been most excellent, and to justify the faith which many architects and engineers have shown in concrete floor construction. It is true that the heat to which they were exposed was not as great as that in the buildings with the tile construction; but it is also true that many of these concrete arches were in the midst of a very severe fire for a considerable time, and came through it, with hardly an exception, absolutely unharmed. We believe that the Pittsburg fire adds convincing evidence to that already accumulated in engineering literature that concrete is entitled to rank as a material of the highest value in fireproof construction."

Among the systems of concrete floors and fireproofing, that known as the Ransome—a description of which is published in the new work by Kidder on "Building Construction and Superintendence," Part I—has been put in practice, and has been used quite extensively, especially on the Pacific Coast, where there is a borax warehouse which has been tested over large areas with a load of 500 pounds per square foot. The theory on which this construction is based is this: Concrete has a great compressive strength, but very small tensile strength, therefore it should be used exclusively in compression. To obtain the requisite tensile strength, square iron rods, twisted cold, are embedded in the concrete. It is easily seen by inspection that these rods are firmly held in place by the concrete. The square surface twisted forms a hollow which ties the concrete in the direction perpendicular to the rod, and the twist ties it in the direction of the rod. Experiment has taught that narrow webs of concrete—say one inch thick—are ample to resist all the strains in the vicinity of these twisted rods, so that, as in Fig. 8, the bottom of the beam in section shows a width of only three inches for the bottom of the concrete cross-beam, which



is found by experience to be amply sufficient; while with an untwisted rod it would be necessary that this should be materially increased or it would cause a flaking off, causing a complete destruction of the concrete directly above the rod. This work is comparatively light and not expensive, as the steel used is of the cheapest character; being square rods, the cost of twisting adds to the strength of the rod sufficient to pay for the expense of the twisting, which does not exceed a dollar a ton. Every rod is tested in the twisting. This system has another advantage, that it forms the floor above. Nothing is better for a warehouse than a smooth concrete floor. It is easy to truck over and avoids the combustible material of the usual wooden floor, as in a warehouse it is desirable to avoid the use of any combustible material, as in case of fire it only adds so much to the burnable material and increases the loss. All the great fires have shown a total destruction of the plaster. None of the plasterings usually in use will stand fire and water. In the Pittsburgh fire, as is universally the case, the plastering was entirely destroyed. A new fireproof plaster has just been put on the market (an invention of Gen. William Sooy Smith), known as "asbestic." It is made largely of pure asbestos, which, as is well known, resists perfectly an intense heat. It is manufactured by the H. W. Johns Manufacturing Company, of New York. This plastering is put on in the usual way, and can be finished rough or smooth, the same as the usual plasters. Tests were made in the presence of the officials from the Supervising Architect's office in Washington. A room was built about four feet high, plastered on the interior with asbestic. This was filled with combustible material which burned furiously for half an hour, when a stream of water through an inch and a half nozzle was poured on the interior, sides and roof, without any effect. The plaster did not drop or crack, but was intact. This is exactly the material that we require for the finishing of our fireproof buildings, for in case a stock of goods takes fire, all the ordinary plastering is destroyed. The fireproof qualities of this plastering will undoubtedly tend to the preservation of the fireproofing. A nail can be driven into it without cracking it, which is often an advantage.

The usual stone vault covers forming the sidewalk are not admissible, as in case of fire they are a total loss. Steel beams with brick arches, covered by a concrete surface, are for this purpose far superior and can be expected to go through a fire without material injury. The exterior should be brick, with terra cotta trimmings. Stone as a rule will not stand fire and water. Granite is particularly bad, flying to pieces so as usually to be a total loss. Good brick stands well. The trimmings and ornamental parts can be of terra cotta, which is as far as material is concerned. Mr. Gates, of the American Terra Cotta Company, assures me that he can furnish terra cotta that will stand severe quench tests. There is no doubt but what all other manufacturers can do the

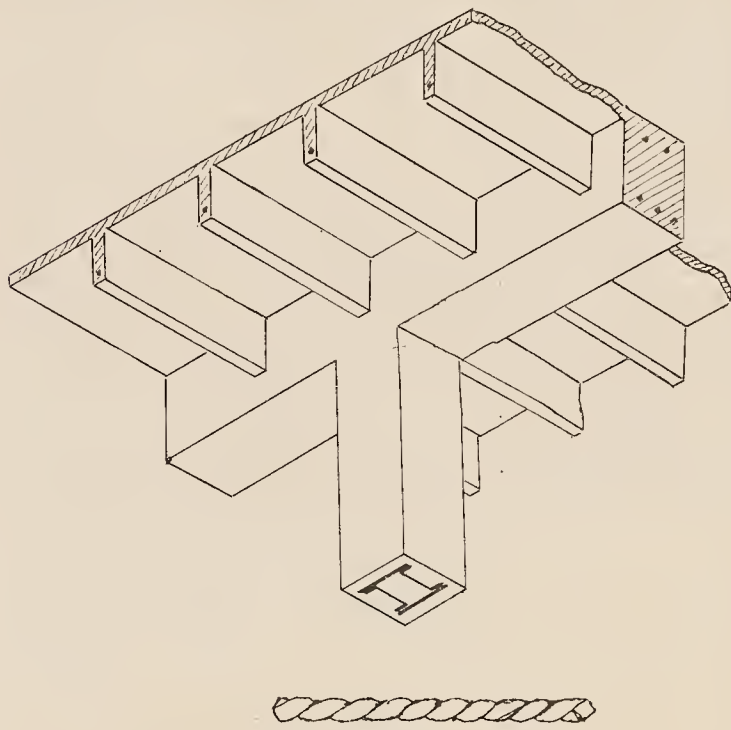


FIG. 8.  
Ransome System of Floor Construction.

same. In burning terra cotta, test pieces are put in the kilns, and when the burning is thought to be finished, these pieces are withdrawn and plunged into water and examined, which is itself a test.

In the report of the Buffalo Convention of Clay Workers, I find the following: "Mr. Batley: The argument of Mr. Purington and what he wished to draw out from the fireproof manufacturers, which was not clearly got at yesterday, was, Is there a clay which will make fireproofing that will stand both fire and water? I say, gentlemen, that there is. There is no need to go beyond Pennsylvania and West Virginia, the vast districts where coke is made, to prove it. Any producer of fire clay knows that the coke furnaces are charged full of bituminous coal, and the coke is burned from seventy-two to seventy-eight hours. The moment the coke has

got through its burning, or in a short period afterward, when it is all aglow, cold water is poured into the furnace from a five-inch pipe. It does not matter how cold the water is. I have made firebrick, and I know bricks in such furnaces will stand for eighteen months. If such a material as fire clay will stand that kind of rough usage, it is quite manifest that it will stand under any other conditions." So that by proper care we can be assured of a terra cotta that will go through a fire without injury.

In conclusion, from the lessons learned from the Pittsburgh fire and from all that we know at this date, a building constructed as I have suggested — a steel skeleton construction with an adequate foundation; the exterior walls of brick with terra-cotta trimmings; the fireproofing and the floors to be of porous terra cotta that has been thoroughly tested, or with concrete strengthened with square rods twisted; the floors to be of smooth concrete; the interior finish, such as wainscots, baseboards and the casings of windows and doors, to be of concrete; the doors to be of metal (these can be as ornamental or as plain as desired); in such a building the stock can be entirely consumed with but little injury to the building other than smoking the walls and ceilings and the blistering of the paint. If the building is protected from external fires by outside shutters then the windows will be destroyed, but if there is no danger from outside fires the shutters can be on the inside of the building, and if closed will save the windows. Manufacturers of ornamental iron are at present at work endeavoring to produce substantial iron window frames and sash, at a price that an owner will be willing to pay. When this is done the loss to the building will be little more than the glass, the interior painting and calcimining. The loss on the stock can only be reduced by strictly fireproof division walls and by shutters to all outside openings, where there is danger from other buildings, and by shutters shutting off the light shafts and stairways from each of the stories.

What I have proposed will add but a small percentage to the cost of the usual fireproof buildings. It simply requires increased knowledge and greater care and thought on the part of the architect, and most careful superintendence of the construction.

#### EFFECT OF ELECTRIC CURRENTS ON ADJACENT MATERIAL.\*

BY JAMES B. COOK, F. A. I. A., OF MEMPHIS, TENN.

AS chairman, and on behalf of the committee appointed at the last convention to consider and report upon the "Influence of Electric Currents on Adjacent and Surrounding Material," I beg to say that your committee has given the subject considerable thought, study and investigation, and we also find that the study of these questions leads on to the study into such laws of the physical sciences as are in a measure intimately connected with the same. This study collectively is, in our opinion, one of the greatest interest to the architectural profession, in a scientific point of view, for it opens up new avenues of thought, new theories and new developments. It banishes old accepted ideas as laid down in the text-books for new formulas and more progressive thought; therefore, to make the subject intelligible to those who are interested in the same, to enter more fully into it on account of its importance; and, again, as there is to be a "Standing Committee on the Applied Arts and Sciences," this matter will naturally come under their control. Such being the case, we feel desirous, as this subject is one of a series and one entirely new to the Institute, to commence on the same by an introduction into the "phenomena of electricity," and in doing so we ask your indulgence if you find we are wandering somewhat remotely from the text as laid down, but we deem it necessary, this wandering, in order that the true path may be discovered, for as yet in all that has been written on the subject of electrical causes and effects, little is yet known; new paths have to be found, and the old ones abandoned, and while we must acknowledge brilliant results have been obtained, which in a measure are, in the greater development of the spark and power, caused only by an increase of the developing power and its generators, though as to actual causes the mystery is still unsolved.

The old familiar question, What is electricity? that is asked in every text-book on electricity, and is answered by saying that it is an imponderable fluid capable of traversing the air, the earth and especially all metals, and for commercial purposes flows through iron or copper wires in an invisible fluid state, has no foundation in fact; but advanced electrical scientists today recognize no such theory, and are free to admit that the exact nature of electricity is unknown. The sources of electricity, such as are termed frictional electricity, hydro electricity, pyro electricity, magneto electricity, thermo electricity, animal and vegetable electricity, etc., are not different kinds of electrical force. Electric force or energy is of one kind only, no matter from what source it may originate. With these denials we are brought to our belief, and to give force to the same we call your attention to the wonders of creation; the visible and invisible worlds; the mightiness of the planetary and stellar systems; our world and all that it contains, and the unseen force that regulates the movements of all that is contained in the whole universe, from the largest planets to the smallest atom of dust; each

\* Report of chairman of the special committee on the "Effect of Electric Currents on Adjacent and Surrounding Material," read at the thirty-first annual convention of the American Institute of Architects, at Detroit, September 29, 1897.



and all are under one law, one force. This law has no deviation; it is the same for a part as for the whole. In order to well understand this law it is necessary to consider the "Atomic Theory," the theory of atoms.

By this theory of matter we are told that all substances, either fluid, gaseous or solid, are made up of atoms. These atoms are the ultimate diminution of each particle; that the atoms are absolutely unalterable in size, shape, weight and density, and are unaffected by any known physical force, but nevertheless possess a definite size and mass, and according to the latest authority the smallest particle of matter, 1-4000 of a millimeter in diameter, will contain about 30,000,000 atoms. This theory of atoms extends from the center of our globe to its surface, and all things about the same to our atmosphere, and to all the systems of the heavens and its limitless region, and to all things visible and invisible.

It is not possible in a report of this character to enter into a full explanation of the theories advanced; we can but call your attention to them in order to complete a chain of reasoning.

Our next and most important consideration is that of the ether that pervades every vacant space of the whole universe; it penetrates everywhere in the animal and vegetable kingdom; everything that is organic and inorganic, pervades everywhere, to the utmost limits of the limitless universe; it is the invisible medium that connects everything, from the minutest atom to the sun, moon, planets and stars of our own system and of all other systems known and unknown. It is the medium in which they all maintain their positions in space, sustaining them as they perform their various revolutions. This ether was in the beginning before the creation of the universe; it filled the limitless space that before was a void; it was the first creation.

This ether is a material substance of a more subtle kind than visible bodies and is totally different from the atmosphere that surrounds our globe.

The transmission of light, heat, electricity and sound are due to this ether medium. The atmosphere has nothing to do with it. Our atmosphere has its specific functions to perform perfectly independent of this ether medium, and it is to this ether alone we must look for the solution of the phenomena of light, heat, electricity and sound. Atmospheric air is a necessity for the production and maintenance of life in the animal and vegetable kingdom only.

The true study of the distribution of heat must be made through a study of the ether medium, and also alone can we solve the great problem of acoustics only through a study of the ether medium, as also the study of light and electricity, all as in connection with the great problem of the life and existence of all buildings.

Briefly we have given this introduction for it is impossible in our allotted time to do otherwise, although volumes might be written on it, so wonderful is it, in all its various phases, but we have merely entered into it for the purpose as a foundation for further investigation.

I now hold in my hand a small piece of iron ore. I choose iron from the fact of its being a substance with which we have the greatest familiarity, being the most extensively distributed and one of the most important of all metals, not only to mankind at large, but particularly to us as architects. It has been in use from time immemorial and marks the gradual progress of the human race from barbarism to civilization.

The reduction of ore to its necessary condition to be wrought into useful forms, from the simplest tool to the most complex machine, also in all forms for peace as well as for war, all combine to excite the energies of the people for its requisition, whether by labor or commerce, impelling a greater mental activity and a greater civilization. It is the greatest of metals for the material advancement of national intelligence and industry.

This iron ore as we now see it must undergo a reduction or smelting to eliminate various earths and salts with which it is combined. After this operation we have the ordinary pig iron of commerce, cast iron as it is commonly called.

This piece of iron I now hold in my hand is a specimen of the ordinary cast iron of commerce. From this cast iron wrought iron is made, and also steel. Observe this piece of cast iron; to the naked eye it seems to be of a crystalline character, very compact and of a bluish color. Now, if we observe this piece of iron through a magnifying glass we find that the interstices between the crystals are again filled with smaller crystals, and as we increase our power of observation we still discover smaller particles, and so on, increasing to infinity. With the point of this very fine needle I take up a minute portion of this iron. You cannot under any possible condition with the naked eye see the particle on this point, but under a very powerful microscope we can see it. It is an atom of iron, so small that 1-4000 of a millimeter in diameter will contain about 30,000,000 atoms. Now, all we have been talking about and all that we have been saying has been for the purpose of introducing to you this *atom*, to the naked eye perfectly invisible, yet this atom and the ether of the universe play the most important part in the creation of all things. The atom as already described, though exceedingly small, possesses a definite size; the atom is indivisible and unaffected by heat or cold or by any known physical force. As an atom, its life is from the beginning to the end, indestructible and forever. Now, this little atom on the point of this needle seems a small thing to talk and write about, but to us all it is a most important factor and deserves a deep research and important investigation.

If we take our own globe, the earth, it is but an atom in the whole universe. We find it has an envelope or atmosphere of its

own, extending up forty-five miles. Investigation tells us that there is an atmospheric envelope to all planets and stars, but the kind of atmosphere is unknown. Take our atom of investigation, it, too, has its atmosphere, an envelope of its own—not only it, but every other atom of whatever kind, liquid, gaseous or solid.

This atom existing in this envelope or covering has a potential force, and has under certain conditions great energy and under other conditions can assume polarity. The power of the atoms exercised on their envelopes sets up the power of cohesion, one as with another, which is the law of cohesion. The loss of the power of the atom to set up this cohesive force produces noncohesion or disintegration, and decomposition takes place. The life or cohesion of the atoms of a mass of material depends on the life and ability of the atom to maintain the cohesive force in the envelope, and, as soon as that life ceases, the cohesive force ceases.

Under all conditions, the inorganic materials of the earth as they exist in their original condition, the atoms of the mass are at rest; a disturbance of the mass causes a movement of the atoms, causing energy; this energy is productive of heat, light and electricity. The ether, as described, is the medium that makes manifest to our senses these phases of the atom energy; without this ether medium no sensible conveyance could be made.

The envelope or covering of the atom is of the greatest importance in the economy of all matter; the atom is merely the germ of the envelope. The envelope constitutes the nature of the material, whether iron, copper, gold, silver, etc. The atom itself is neither, and its nature cannot be determined by any known analysis, as to its composition, for it has none, but the envelope assumes all that is wanting in the atom except electrification, and that belongs only to the atom; the envelope assumes none of it, but the envelope is the receiver after having been created by the atom.

Agitation, rotation, or vibration, when applied to these atoms, produces electrical manifestations, the greater the increase of these forces the greater the manifestations.

There is another condition of all matter, namely, a sympathetic manifestation. A body that is in a state of electrification will induce another body some distance away to a similar condition of electrification, and that without any contact or connection, this condition being brought about by the ether medium, this ether medium being the communicator.

We again find that magnetism is the normal and latent condition in all matter, and that the law of cohesion as between all atoms is the result of magnetic influence. Electricity, we find, is caused by disturbing or bringing into life the latent magnetism, and the result is to destroy cohesion and produce disintegration.

We sum up by saying that cohesive force is the result of magnetism and that disintegration is the result of electricity.

Magnetism is a conservative force and pervades everywhere. Electricity is a destructive force and the primary cause of disintegration.

Briefly we have called your attention to the ether, an invisible medium pervading every void of the universe, either solid, liquid or gaseous, a most important factor in the study of heat, light, electricity and sound. We have also called your attention to the theory of atoms and cohesion, also to magnetism as a necessary condition and pervading all things, and to electricity as a destructive or disruptive agent, and unlike magnetism does not exist in nature as a force but is brought into existence by agitation of some kind.

We now come to the consideration of the effects of electricity or electric currents on the materials of buildings. The atoms of matter of all kinds in their natural or normal condition are at rest, and cohesion is perfectly maintained by the magnetic influence of the atoms on the envelopes of the atoms. A disturbance of any kind on material sets up electrical manifestations; it may at first be exceedingly minute, yet nevertheless exists.

Every operation in building, from the digging of the foundation, the erection of the walls, and the covering-in of the edifice and equipping of the same is a disturbance. The mining of the metals that enter into the building is a disturbance—in fact, the making of the different kinds of material, from the raw to the finished stock, is a disturbance. Everything that is done about a building or enters into its construction has been disturbed from its primitive rest, and from that moment of disturbance electrical conditions have been set up. The magnetic force of the atoms which induced cohesion have been at that moment displaced by electrical conditions destroying cohesion and producing as an ultimate result disintegration and the dissolution of all things. The atoms of matter in their natural condition which were at rest have by this disturbance been set in motion, and this motion never ceases until dissolution takes place.

The wiring of buildings for electrical purposes, such as heat, light and power, however well insulated, when electrified sets up by a sympathetic action a greater disturbance or agitation of the atoms of the materials, and thereby decreasing the cohesive force of the atoms, and directly as the electricity in the generator and in the wires is increased, so is by sympathetic action the want of cohesion in the atoms increased; rest does not restore cohesion once disintegration is set up, it goes on until complete dissolution takes place. As a result, the greater the electric disturbance the greater the decrease in cohesion in all matter occurs, and is inversely as the magnetic condition of the matter.

In regard to the application of what has been said, to the introduction of electricity into our buildings, the question naturally arises, has it any harmful effect upon the materials in the



construction. We answer, if our theory is correct, yes; for by induction in all the materials electric excitation is set up, thereby lessening the cohesive force of the atoms of the materials, and thereby in course of time disintegration takes place. The greater the conductivity of the materials, such as iron and steel, the quicker the process, and the less the conductivity the slower the process, such as all vitrified matter.

Cannot, if these conditions are found to be, some means be found to obviate or prevent this process of disintegration? Under the ordinary conditions of applied electricity we are not aware of any arrangement to prevent it, and can only at the present time make a few suggestions.

In buildings of the ordinary kind we have nothing to say. Iron and steel is a small factor in the construction. The system of distributing electricity throughout the same for light and power purposes from our present experience may be correct, and the wires and the insulation of the same may be perfect for this class of buildings only.

What we wish particularly to call your attention to is the new class of buildings—those constructed almost wholly of iron and steel, known as the skeleton constructed building. Under the present practice of wiring buildings, no difference is made in the material or methods of doing the work. In the ordinary class induction plays a very insignificant part, while in the steel constructed buildings it plays a very important part, and should be gotten rid of if possible.

The wires as manufactured, and their insulating coverings, are good in a general way, and may be said to be well insulated, but they are not insulated so as to prevent induction, and this is the great problem. Passing wires through metal conduits increases the induction, while the metal conduits are good against mechanical injury to the wires, and to accessibility, and on the other hand are bad on account of induction. A vitrified covering seems to offer the best protection both as to nonconductibility and induction.

The columns and posts of iron or steel in the skeleton construction are almost always insulated from the ground by reason of the piers of stone, concrete, or brick on which they are built. We think they should have a complete ground connection by means of heavy copper wires; also at all contact places between metals they should be perfectly clean and free from paint of an insulating character, and all isolated structural parts of the frame of steel should be connected by wiring to the main part, thereby forming a connected and continued system of the iron and steel parts, that the same may be well grounded. By this means we think the vibratory forces will at least be reduced to a minimum. We would suggest that the wiring throughout the building should be done by one firm only, thereby avoiding confusion in the system.

We offer what we have said merely as suggestions—facts can only be brought out by experiment and practice. This subject of electrical currents on materials in buildings is one of the greatest interest to the profession, and when well investigated will prove to be a very destructive agent, particularly on iron and steel, and may be the primary cause of many accidents that have occurred in the failure of structural pieces in the skeleton construction.

In conclusion we thank you for your attention, and ask of you to investigate this subject thoroughly for yourselves, for at this time it is one of the greatest importance, as an applied science, to the profession. Apart from that, the study is exceedingly interesting.

#### PROCEEDINGS OF THE THIRTY-FIRST ANNUAL CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

THE thirty-first annual convention of the American Institute of Architects was held in Detroit, Michigan, on September 29 and 30 and October 1, 1897. The headquarters of the convention was at the Cadillac hotel, where also the sessions were convened.

Among the members and visitors present who registered were the following:

George B. Post, of New York; James S. Rogers, of Detroit, Mich.; Levi T. Scofield, of Cleveland, Ohio; James McLaughlin, of Cincinnati, Ohio; George W. Rapp, of Cincinnati, Ohio; J. W. Yost, of Columbus, Ohio; Alfred Stone, of Providence, R. I.; E. O. Fallis, of Toledo, Ohio; Robert D. Andrews, of Boston, Mass.; Theo. Carl Link, of St. Louis, Mo.; Normand S. Patton, of Chicago, Ill.; John M. Donaldson, of Detroit, Mich.; Cass Gilbert, of St. Paul, Minn.; J. Foster Warner, of Rochester, N. Y.; Frank C. Baldwin, of Detroit, Mich.; James B. Cook, of Memphis, Tenn.; R. E. Raseman, of Detroit, Mich.; John Scott, of Detroit, Mich.; John H. Coxhead, of Buffalo, N. Y.; H. J. Meier, of Detroit, Mich.; Jacob Agne, of Utica, N. Y.; J. H. Pierce, of Elmira, N. Y.; Frederick H. Yonge, of Utica, N. Y.; S. R. Burns, of Dayton, Ohio; William Bryce Mundie, of Chicago, Ill.; George A. Frederick, of Baltimore, Md.; Gustave W. Drach, of Cincinnati, Ohio; John H. Ball, of Cincinnati, Ohio; Edward I. Nickerson, of Providence, R. I.; Robert E. Dexter, of Dayton, Ohio; George H. Helme, of Springfield, Ill.; Marshall Simpson Mahurin, of Fort Wayne, Ind.; E. R. Austin, of South Bend, Ind.; George Keister, of New York, N. Y.; Glenn Brown, of Washington, D. C.; S. A. Treat, of Chicago, Ill.; H. J. M. Goylls, of Detroit, Mich.; T. D. Evans, of Pittsburg, Pa.; C. M. Bartherger, of Pittsburg, Pa.; L. Boucherls, of Youngstown, Ohio; C. C. Burke, of

Memphis, Tenn.; Arthur A. Scott, of Detroit, Mich.; H. R. P. Hamilton, of Washington, D. C.; Henry Hake, of Detroit, Michigan; C. A. Wallingford, of Indianapolis, Ind.; Dankmar Adler, of Chicago, Ill.; J. F. Alexander, of Lafayette, Ind.; William G. Malcomson, of Detroit, Mich.; William B. Ittner, of St. Louis, Mo.; Zach Rice, of Detroit, Mich.; William F. Higginbotham, of Detroit, Mich.; George D. Mason, of Detroit, Mich.; Prof. Warren P. Laird, of Philadelphia, Pa.; W. B. Strattan, of Detroit, Mich.; Edward H. Kendall, of New York, N. Y.; W. H. Conway, of Springfield, Ill.; A. Eichhorn, of Orange, N. J.; Charles C. Taylor, Cincinnati, Ohio; Henry C. Meyer, Editor *Sanitary Engineer*, New York, N. Y.; Charles E. Jenkins, Editor *Architectural Reviewer*, Chicago, Ill.; R. Clipston Sturges, of Boston, Mass.; W. G. Preston, Boston, Mass.; W. L. B. Jenney, of Chicago, Ill.; Robert Craik McLean, Editor *THE INLAND ARCHITECT*, of Chicago, Ill.; C. Edward Vosbury, of Binghamton, N. Y.; Mrs. J. Foster Warner, Mrs. W. B. Ittner, Mrs. George A. Frederick, Miss Katherine Frederick.

The first session was called to order at 10:30 o'clock A.M., President George B. Post, of New York, in the chair. The president introduced Mayor William C. Maybury, who made an appropriate address of welcome, which was responded to by President Post, who delivered his annual address as follows:

#### PRESIDENT'S ADDRESS.

In conformity with time-honored custom, it becomes my duty as your president to open this, the thirty-first annual convention of the American Institute of Architects with an address.

I last year directed your attention to the fact that during the forty years which have elapsed since that first meeting of a few architects which resulted in the ultimate creation of this body—a body which, through the insistent and persistent effort of its members, has largely controlled and directed the movement by which a noble art has been developed and has become firmly rooted in our land. Architecture, painting, sculpture (the sister decorative arts) have advanced together, as together they ever must advance or fall.

The States containing the great business centers have been so thoroughly imbued by artistic influence that in them architecture has received its proper recognition as the most exact, exacting and comprehensive of the arts; and the architect has become the accepted arbiter in all questions relating to building or decorative work.

Elsewhere throughout the land hand in hand with its material improvement the architect advances in consideration, until it is safe to predict that the period is not far distant when north, south, east and west alike will recognize the fact that without the intervention of the skilled and thoroughly educated architect no building can be artistically successful, or economic in construction; that truly artistic construction is always economic; that the payment of the ordinary fees of the accomplished architect is the most true economy.

It is the proud claim of the architect that his work forms the most positive and enduring evidence of civilization. In all countries and periods the government has been the great builder, and appointment to government work has ever been the supreme reward of proved ability in our profession.

Our government in its early structures gave promise that its buildings would be an honor to the nation. Its work was rarely bad, and often good. The Capitol and Treasury buildings are works of which we may well be proud, but with their completion (until the building of the Library) all art in government architecture seemed to have died. At their completion the office of the Supervising Architect of the Treasury Department was created. Several able men have filled this office, but they have shown by their work, and confessed in their reports, that in it they have been powerless for good. This is conclusive evidence that the system is radically wrong. Its failure is another proof that architecture is a fine art; that it must be treated as a fine art, and not as a mere business; that a successful design must be the result of the concentrated effort of one mind, and that the moment that conflicting demands on the controlling mind are such that its proper functions must be delegated to others, in that moment all art leaves the work and it becomes stale, flat and unprofitable.

All honor to the Secretary of the Treasury who has decided that hereafter the buildings erected by his department, the great builder for the government, shall fairly represent the art of the country, if this can be accomplished by procuring designs in each case by limited competition and by causing the best design to be selected by a jury composed largely of carefully selected architects. All honor to Lyman J. Gage, Secretary of the Treasury of the United States, and honorary member of this Institute. If successful in this undertaking his name will shine in history most brilliantly as the rescuer of government architecture from the incubus by which it has been crushed for years.

In inaugurating this reform your president has been constantly called upon for assistance and advice. He has nominated twenty-one competitors for the three competitions which have been already ordered for the Federal buildings for Norfolk, Virginia, and Camden, New Jersey, and for the United States Immigrant Station, Ellis Island, in New York harbor. For each work he has selected those who were, in his opinion, the best fitted to execute the work whose offices were nearest to the work proposed, and in making the nominations has paid no attention to the question as to whether or no nominees were members of the Institute of Architects. In the case of two of the competitions he was aided by the advice of a small meeting of your Executive Committee.

Your president assumed the responsibility without consultation with them to offer the services of the Directors of the Institute and of several prominent architects in different cities, Fellows of the Institute, to serve as jurors. From this list the jurors have been selected.

The scheme for government competitions is as yet full of imperfections and subject to grave objections, but it is believed that with time and experience all of these imperfections and objections can be removed.

The procuring of designs for government buildings from architects in general practice will meet most determined opposition. It is probable that every possible obstacle will be opposed to its successful operation by those who profit by the present system. Every exertion should be made by the Institute and by its members individually to support and aid the secretary in effecting the reform.

The Tarsney act, under which these competitions are authorized, requires serious amendment, and the architects of the Institute should make a renewed effort to secure early action.

At the request of the Secretary of the Treasury and the president of the Civil Service Commission, your president has selected a commission consisting of D. H. Burnham, of Chicago; Robert S. Peabody, of Boston; T. P. Chandler, of Philadelphia, and John M. Carrere, of New York, who, together with himself, form a civil service board for the examination of candidates for the Supervising Architect's Office of the Treasury Department.

The last convention of the Institute wisely resolved that its headquarters should be removed to Washington. The impediments which rendered the change temporarily impossible will soon cease to exist, and it is my opinion that it is important that the change should be made as soon as it can be conveniently accomplished; and that the Institute should be constantly represented in Washington by a paid secretary, who should be appointed by the Directors, to whom should be given the power of removal. This may require the division of the office and the creation of corresponding and recording secretaries.

Establishing the Home of the Institute in the national capitol will form an era in its existence. It has passed fairly through its formative stage, its period of organization. From struggling youth it has grown to vigorous manhood and has become a power in the community. The time has come when it



is possible that it should undertake work better and more important than the perfection of its interior organization and establishing provisions for the regulation of professional practice.

I suggest that a committee shall be appointed with power to ask Congress to make the necessary provisions to establish in Washington a National Architectural Museum, to be in the custody of its natural guardian, the American Institute of Architects—in which museum shall be collected, for the use of the architectural students of the land, copies of all that is good in the great collections of Europe. This can be done at a moderate expense through our foreign ministers and consuls. I suggest that this committee shall be instructed to consider the feasibility, and if in its opinion it is practicable, to proceed to procure sufficient sums by subscriptions from the rich patrons of art (all of whom are in the clientèle of the Fellows of the Institute) to endow traveling fellowships to be awarded in competition, and to prepare a scheme for such competitions.

I suggest that this committee shall be directed to consider if it may not be wise to establish a grade of associates of the Institute, a limited number of these associates to be admitted without dues in each year; the grade to be open to all students who can present certificates from their schools or prove by examination that they are possessed of sufficient technical knowledge, the associates to be selected by competition in design and modeling and drawing; associates so chosen to alone be eligible for competition for the Institute's traveling fellowships.

It is certain that the necessary funds can be easily raised if each Fellow of the Institute will put his shoulder to the wheel and act as a commission of one to seek subscriptions from his clients.

The Institute thus, without clashing with the schools, will practically direct the matter of architectural education and will force the schools themselves to become more artistic and less pedagogic in their systems of instruction; for the grade of associates of the Institute will be eagerly sought by the mass of scholars and can only be gained by artistic excellence.

No movement for the advancement of art in our country has occurred in which the individual members of this body have not exerted a controlling influence. I think the time has come when the Institute itself as an organization should assert its right to control the character of architectural education.

The convention being now open for the transaction of business, Secretary Alfred Stone, of Providence, read the following report from the Board of Directors:

#### REPORT OF BOARD OF DIRECTORS.

The Board of Directors wish to congratulate the Fellows of the Institute on a brighter outlook, not alone because the probable increased demand for their professional services is near at hand, but also that the year now closing has brought with it many things to encourage the profession in the belief that it has obtained a firmer hold upon the confidence and respect of the National, State and municipal governments and also of the people of the country. After years of persistent effort and many attempts to procure national legislation which would place the designing of government buildings in the hands of the profession at large, either by individual selection or through well-managed competitions, the present Secretary of the Treasury, Hon. Lyman J. Gage, an honorary member of the Institute, has, under the Tarsney Act, begun to put into operation the necessary steps to bring it about. He has instituted an examination under civil service rules by Fellows of the Institute, who have expressed their willingness to assist him in the selection of a person to serve as Supervising Architect of the Treasury Department, and has also invited certain architects to submit plans for at least two buildings for the National Government, one at Camden, New Jersey, and the other at Norfolk, Virginia, and it is understood that he has already, or soon will, ask for competitive plans for buildings on Ellis Island to take the place of those burnt to the ground in the early summer.

In all of this work, Mr. Gage has put himself in communication with the officers of the Institute, and it is not too much to say that no important step has been taken by him without such consultation, and he has, without sacrificing his own independent judgment, acted in entire harmony with the advice and in concurrence with the views of the Institute.

In State affairs, the Illinois Legislature has, at the request of the profession, passed a law providing for licensing architects and the regulation of the practice of architecture, and examiners have been appointed thereunder. Minnesota has intrusted the erection of its statehouse to one of our own Fellows, who won the prize in an honorable and fairly earned competition. The State of Pennsylvania started out, apparently in good faith, to procure plans in competition for the proposed statehouse and State buildings to supply the need created by the burning of the old statehouse. Its outcome is, however, still in doubt and it looks now as if this would have to be added to the long list of competitions which have miscarried.

The competitions which have emanated from county, municipal and corporate bodies of a public or semi-public character have been numerous, and their details and conduct have been as unlike as the themes they proposed for competition, and some have become notable for the violation, on the part of the promoters, of the conditions which they made themselves to govern the competition—one, at least, of which it is probable will be passed upon by the United States courts before it is known whether architects have any legal protection from the consequences of such violation; and that in Pennsylvania for the capitol building at Harrisburg has been brought to the attention of your board by the action of the Philadelphia Chapter and by the complaint of Messrs. Furness, Evans & Co. The action of the board can be best given by the extract from the records of the meetings of yesterday and the day before.

But more ambitious than either is the proposed international competition for the California University, which is almost, if not entirely, unanimously considered by American architects as unadvisable and likely not to eventuate in a satisfactory solution of the problem.

The following are the extracts from the minutes of the meeting of the Board of Directors of the American Institute of Architects, at Detroit, Michigan, September 27 and 28, 1897, and the report of the committee in reference to the Harrisburg competition:

"The secretary read a communication from Messrs. Furness, Evans & Co., of Philadelphia, addressed to the president of the Institute, remonstrating against the finding of the experts on the competition for the capitol building at Harrisburg, Pennsylvania, making serious charges against the experts, two of whom are Fellows and the other an honorary member of the Institute, after which a communication from the Philadelphia Chapter reporting that the competition referred to had become a public scandal, and submitted with said communications exhibits A to Z, inclusive, to sustain its allegations, which, after being examined by the Board, were referred to a committee of three, who gave the matter prolonged consideration and made the following report, which was unanimously adopted by the Board of Directors:

#### REPORT.

"Your committee to whom has been referred certain charges presented to the American Institute of Architects by Messrs. Furness, Evans & Co., of Philadelphia, and countercharges made by the Philadelphia Chapter of the American Institute of Architects, in the matter of the conduct of the recent competition for the selection of an architect for the capitol building at Harrisburg, Pennsylvania, beg leave to report:

"That they have carefully examined all the evidence presented to the Institute, and find as follows:

"That the board of experts employed has followed closely the rules governing the competition, which rules properly provide that the object of competition is to decide upon an architect through the selection of a satisfactory scheme of design, rather than to secure a set of plans so perfectly studied that they can be used without revision.

"Further, that the commission is bound to employ one of the eight authors of plans selected by the experts, to perfect the same under their direction and to continue him in charge of the works until completion.

"Further, that we find that the charges of Messrs. Furness, Evans & Co. against the board of experts are not sustained by the evidence, and we con-

demn the course taken by them in attempting to directly influence the action of the commission and to induce it to reopen the competition.

"Further, that we have the profoundest respect for the action of Governor Hastings in upholding the decision of the experts and insisting that the commission decide all questions by the rules prepared, approved and signed by it to cover this competition.

"Further, that the architectural profession has reason to be grateful to the Attorney-General of Pennsylvania for the direct and clear manner in which he has decided the legal questions arising; and for this opinion delivered to the commission, that they are bound to make the award in accordance with the decision of the experts. Respectfully submitted,

"E. I. NICKERSON.

"T. C. LINK.

"J. M. DONALDSON."

Notwithstanding the unsatisfactory results which have followed many competitions the fact remains that some have proved successful, and for the present at least we can see no prospect of there being fewer of them than formerly. It therefore becomes more important that the fixed and simple rules which have stood the test of experience should be kept constantly before the promoters of competitions, and also that competitions are for the selection of an architect as evidenced by the manner in which he has grasped the scheme and presented the best motif capable of execution for the sum named in a substantial manner or that may be modified without destroying the motif, rather than for obtaining full and complete working plans of the problem.

It is also incumbent upon architects to fully recognize and live up to the ethics of the profession and to see to it that no violation of them be committed which can be pointed to as a justification of their violation by the promoters of competition.

The matter of licensing architects is likely to be taken up and discussed in this convention, and the Board does not propose to anticipate the same by the expression of any opinion except to again urge upon the Institute the importance of an educational test for membership in the Institute, and a full realization of the fact that the conduct of every member should be guided by the highest professional ethics rather than by commercial and hustling competition with the concomitants attending the scramble for business which marks the spirit of the age, and which unfortunately has found some foothold among architectural practitioners, some of whom may be able to write F. A. I. A. after their names.

The membership in the Institute has about held its own during the year. There have been four deaths since the last convention of Fellows of the Institute—Mr. Max Reutti, of Hamilton, Ohio, who died at forty-one years of age, November 6, 1896, at Asheville, North Carolina, where he had gone for the benefit of his health; Mr. George W. Field, of Omaha, Nebraska, February 27, 1897, in the fifty-eighth year of his age, of locomotor ataxia; Thomas J. Furlong, of St. Louis, in March, 1897; Mr. S. M. Patton, April 2, 1897, of Chattanooga, Tenn., who was burned to death in the block where he roomed.

Gen. Francis A. Walker, president of the Massachusetts Institute of Technology, who was elected an honorary member at the last convention, and accepted the same with terms of high appreciation, died but a few months thereafter. He had shown his interest in the Institute by his cordial support of the architectural department of the Institute, and among the last subjects which had engaged his thoughts and attention was the plans of a new building and other changes for the especial benefit of this department of the Institute.

Prof. De Volson Woods, a corresponding member of the Institute, who occupied the chair of Mechanical Engineers at the Stevens Institute, Hoboken, died June 26, 1897.

Four have resigned, eight have been elected Fellows, and the Board has just ordered the secretary to issue a letter ballot containing the names of nine candidates.

It is undoubtedly true that two reasons have existed and account for no greater increase—one is the dullness of the times and the small amount of professional employment in the last four years, and the other is the uncertainty as to what the requirements for membership are to be in view of the fact that a committee was appointed at the last convention to write the Constitution and By-Laws, and a wise decision and settled policy is absolutely necessary to insure the growth of the Institute proportionately with the growth of reputable practitioners.

The question of establishing permanent headquarters at Washington has not been fruitful of results, and a report upon the subject may be expected from the committee to which it was referred with power to act.

At the request of the Washington State Chapter a resolution was passed at the last convention recognizing the value of the timber tests made by the Forestry Division of the Department of Agriculture, and expressing approval of Senate Bill introduced by Mr. Squire, of Washington, making an appropriation for the continuance of the work. This resolution was sent to Mr. B. E. Fernow, Chief of the Division, who replied that they turned back into the Treasury over \$6,000 unused from the previous appropriation, and that his desire was to simply have the full use of the present appropriation, which would enable him to rig up a simple laboratory and to carry on some preliminary scientific investigations which appeared to be absolutely necessary before the data so far collected, or to be collected in the future, can assume the value which they ultimately have. To do this we have money enough, and may profitably wait for larger appropriations until we have revised the general method of testing. In this particular the determination of the moisture present and its influence upon the strength requires much more careful investigation than the wholesale method heretofore employed has permitted.

I recall to you the fact that this series of investigations was not so much undertaken to establish merely strength values but rather to study the effects of such variable influences upon strength, and finally to furnish data of inspection by which an engineer or architect may be able to predict relative value of any given stick. I call your attention in this connection to a short article which is to appear in *Riehle's Physical Digest* of next month, in which I contend that for the establishment of standard values of strength green timber alone should be tested.

I have written thus at length, appreciating your interest in our work so that you may know my position regarding the present status of it, adding as a postscript that, "We shall presently issue a circular containing in condensed form the results of all our tests, 40,000 in all."

Your secretary having sent to Mr. Fernow a list of the Fellows of the Institute, he presumes they have all received the circular as he has himself received one.

The last issue of the proceedings contained a chronological list of all persons who have been Fellows or Associates of the Institute, and members of the Western Association of Architects so far as they could be ascertained. The secretary would esteem it an especial favor if any person who may have discovered errors or omissions would send notice of the same to him.

The Board would recommend the election of Mr. Tokuma Katayama, K. H. Chief Architect Department of Imperial Household of His Majesty the Mikado, and George S. Greene, M. A. S. C. E., of New York, as honorary members of the Institute; and Mr. Aug. Eichorn, of Orange, New Jersey, a former Fellow of the Institute who has temporarily gone into manufacturing and commercial business, Mr. B. E. Fernow, chief of the Division of Forestry of the United States Department of Agriculture, and William Woodward, Professor of Architecture at Tulane University, New Orleans, as corresponding members.

A committee of three, composed of John H. Coxhead, of Buffalo, Glenn Brown, of Washington, and W. B. Ittner, of St. Louis, was appointed, to which the report of the Board of Directors was referred.

S. A. Treat, the treasurer, presented his report which was referred to an auditing committee and subsequently reported approved.

A synopsis of the reports from Chapters was read by the secretary and referred to a committee composed of E. H. Kendall, J. F. Alexander and E. O. Fallis.



The reports of standing committees were presented, as follows :

REPORT OF THE COMMITTEE ON EDUCATION.

Your committee has had several meetings during the year, attended by three members of the committee, and there has been some correspondence with new members who were unable to attend the meetings. The committee felt disinclined to make any recommendations, still less offer any criticisms on the usually admirable work being done by all architectural schools, until at any rate they could accumulate reliable data as to what the schools are really doing. They felt, indeed, that it was their first duty to lay before the Institute such information, so that the profession might be more thoroughly informed with regard to the amount and character of work being done in this country in the way of architectural education.

To this end said committee sent out a series of questions to the principal schools, and would present as the chief part of their report a tabulated statement of the replies to some of the questions. This statement is as yet necessarily incomplete, the more so as the answers from three of the more important schools, namely, those at Columbus and the University of Illinois and of Pennsylvania, are not at hand. It is hoped, however, that full information in regard to all the schools, may soon be obtained, and your committee would then be glad to send — if they are authorized to do so — a full printed statement to each Fellow of the Institute. This information may then serve as a sure basis for discussions as to the present condition of architectural education in the United States.

Your committee believe that this information will show two things : In the first place, that the influence of the schools is already far stronger than is often supposed ; and in the second place, that the time has come when the Institute may very properly demand a thorough architectural training (to be evidenced by the diploma of a recognized school of architecture, or, failing that, the passing of an examination to be established by the Institute) as a *sine qua non* of admission to the Institute.

In order that this important question might be adequately brought to the attention of the Institute, your committee has, in conjunction with the committee of arrangements, provided a series of papers on architectural education, which it is hoped may be followed by full and fruitful discussion. Respectfully submitted. For the committee. A. LANGFORD WARREN.

REPORT OF COMMITTEE ON PUBLICATION AND LIBRARY.

PHILADELPHIA, August 18, 1897.

Mr. Alfred Stone, Secretary, American Institute of Architects, Providence, R. I.:

DEAR SIR,—As chairman of the Committee on Publication and Library I beg to report that no business has been brought before this committee, no books, papers, or other property of the Institute, have been placed in the custody of the committee, and that the committee, having no business to transact, has held no meetings.

I beg again, on behalf of this committee, to call the attention of the Institute to the fact that such books, papers, etc., as are the property of the Institute are scattered, and that there seems no chance of assembling them and forming the nucleus of a library until a local habitation is found for the Institute. As soon as the Institute has a home, the Committee on Publication and Library will have property to guard and duties to perform. Very truly yours, (Signed) FRANK MILES DAY, Chairman.

REPORT OF COMMITTEE ON CONSERVATION OF PUBLIC BUILDINGS.

Mr. Alfred Stone, Secretary, A. I. A.:

NEW YORK, September 20, 1897.

DEAR SIR,—Your letter received. I did not know that I was still on the Committee for the Conservation of Public Buildings. To my knowledge I have not been notified of the dignity this year.

It occurs to me to remark, What is the use of this committee? The committee has made, in one of its reports, an appeal to the Institute to do all they can to save the present Customhouse in New York from demolition, the largest and most perfect example of the beauty of the Greek Ionic order extant here. In one of its reports it has urged that the Government should utilize its grand portico for memorial sculptures of departed heroes, thus making it a Walhalla—this would be entirely appropriate and proper. This was urged by the committee most emphatically in their report some years since. Italy today is spending millions of money to erect a similar frame for such memorials. It looks now that the committee's work had been thrown away, from the fact that for more than a year since a commission has been appointed by the Government to utilize the site of this building for a new building, to destroy this monumental architectural pile and replace it probably by a modern skyscraper. The ostensible reason for taking this building down is that there is not room enough in it. The basement of the rotunda, which is four feet above the street, is about 100 feet in diameter, with a groined ceiling, and other parts of the building are also crammed to the ceiling with papers, of which there are printed copies already made. They certainly might use some other building for this storehouse purpose.

If the Government wants a new building, why cannot they acquire the Bowling Green site for it—a most noble site for a public building facing up Broadway. Respectfully submitted,

R. M. UPJOHN, Chairman.

REPORT OF COMMITTEE ON ADVISABILITY OF LICENSING ARCHITECTS.

At the thirtieth convention of the American Institute of Architects the following resolution was adopted :

"Resolved, That a committee of three be appointed to obtain expressions of opinion from the Chapters as to the advisability of licensing architects by State legislation, and the relation which the examination for such license should sustain to that required for examination for admission to membership in the Institute; and, further, if they deem it expedient that the election of Fellows be made more dependent upon professional skill and practice than at present."

The committee appointed by the president, under the above resolution, to obtain expressions of opinion of the Chapters upon the points covered in this resolution, has corresponded and solicited expressions of opinion from all twenty-four Chapters of the Institute.

Up to this date twenty Chapters have responded, either officially, by resolutions passed by the society and indorsed by the officers, or unofficially, by sending to this committee a statement of the action the society had taken in previous years upon the subjects upon which inquiry was being made, or by the expressions of opinion of the majority of boards of directors or executive committees. Under the conditions which these reports have come to our committee, we feel that the unofficial communications are as thoroughly representative of the feeling of the Chapters from which they come as the official communications.

An analysis of the report of the twenty Chapters responding, reveals the following facts :

Seven reports are official, containing the resolutions of the societies upon these points; thirteen reports are expressions of the majority of the executive committee and leading members of the society through the secretary or some official of the society.

The first proposition considered is, "The advisability of licensing architects by State Legislation." Upon this question fifteen of the nineteen Chapters are in favor of this action; one Chapter unofficially reported as undecided by the secretary is reported to favor the resolution by another member of the society; one Chapter gives no expression upon the subject; and three Chapters regard it inexpedient at this time in their State, although they do not oppose the scheme.

Upon the second proposition, in regard to the relation which the examination for license should bear to examination for membership in the Institute, seven Chapters express themselves that the examination admitting to Fellowship in the Institute should be higher than the examination required to practice the profession; one Chapter thinks there should be no relation between these examinations; one Chapter thinks they should be directly related; one

Chapter does not understand the inquiry, and twelve give no expression of opinion.

By the terms of the resolution and from the fact that there is practically no examination for admission to the Institute at the present time, this question is exceedingly obscure.

Upon the third proposition, "That the election of Fellows be made more dependent upon professional skill and practice than at present," thirteen of the Chapters are in favor of increasing the standard; one is not in favor, and the others give no expression of opinion upon the subject.

It appears from the correspondence, which is voluminous, that in five of the States of the Union laws have been introduced in the various legislatures looking toward the establishment of a board of examiners and some standard of professional skill to be required of those who are permitted to practice architecture. These bills, in all cases, so far as the correspondence indicates, have been introduced, advocated and supported by the architects of the various States where the bills were introduced, both as organized bodies and as individual practitioners. In one State, Illinois, this law has been passed, and is now in operation, or, at least, the board of examiners has been duly organized, and is now ready for work.

The general consensus of opinion as expressed by the replies of all the Chapters is almost unanimously in favor of legislative enactment restricting the practice of architecture to those who have the ability to design strong and safe buildings.

Upon the second proposition there is not such a strongly pronounced majority; but the idea generally prevails that the standard of professional skill and ability should be higher for Fellowship in the Institute than is necessary to pass a State examination and receive a diploma, certificate or license.

Upon the third proposition, whether membership in the Institute should be more dependent upon professional skill and practice than at present, there is practically a unanimous answer in the affirmative.

The committee feels justified, from the nature of the correspondence, in recommending to the convention the adoption of such action and standard of examination, not inconsistent with the By-Laws, as shall require and demand higher professional standards than have hitherto obtained.

CHAPTER REPORTS.

The Chapter reports, together with this synopsis, we herewith submit as the report of your committee :

CHAPTERS.	Favor Licensing Architects.	Institute Examination higher than License Examination.	Favor Higher Standard of Admission.	Official.	REMARKS.
New York ... ..	.....	Yes	Yes	No	No positive position taken. Might be good under some conditions. Bill twice failed to pass.
San Francisco ....	Yes	.....	.....	No	
Philadelphia .....	Yes	Yes	Yes	No	
Washington, D. C. ....	.....	.....	.....	.....	No expression of opinion.
Detroit .....	Yes	Yes	Yes	No	
St. Louis .....	Yes	?	?	Yes	Not practicable at present in this locality.
Boston .....	.....	.....	.....	Yes	Not practical at present.
Worcester .....	Yes	.....	.....	Yes	
Central New York. ....	Yes	Yes	Yes	No	Bill introduced in three different legislatures; failed to come to vote once; passed by both houses twice, and failed by not being signed by the Governor each time.
Indianapolis .....	Yes	.....	Yes	No	
Ohio .....	Yes	Yes	Yes	No	Object to word <i>license</i> ; suggest <i>certificate</i> or <i>diploma</i> .
Rhode Island .....	.....	.....	Yes	No	Not practicable at present to license architects.
Colorado .....	Yes	.....	Yes	Yes	Bill before legislature last winter. Will present bill in 1898. Solicit interchange of ideas.
Pittsburg .....	Yes	.....	Yes	No	
Illinois .....	Yes	Yes	Yes	No	Bill passed and went into effect July 1. Three of Board are members of Chapter.
Brooklyn.....	Yes	.....	Yes	Yes	Did not understand second inquiry.
Buffalo .....	Yes	No relation	Same	Yes	Bill should be pushed until license is a certainty.
S. California .....	Yes	.....	.....	No	Bill introduced. Copy sent.
Minnesota .....	Yes	.....	Yes	No	
Washington State. ....	Yes	Yes	Yes	Yes	

J. H. PIERCE, Chairman.

FRANK MILES DAY.

JOHN A. FOX.

Among the reports from special committees that presented by J. B. Cook, of Memphis, on the effect of electric currents on adjacent and surrounding material, was the more important (printed on page 26) :

This report, which was received with great attention, and which will form a basis for further investigation, was followed by one of similar import.

REPORT OF DELEGATE TO NATIONAL CONFERENCE ON STANDARD ELECTRICAL RULES.

In accordance with a request of the National Electric Light Association and its Committee on Electric Rules, the president of the Institute appointed the undersigned to represent the Institute in a joint conference composed of delegates from the following associations :

American Institute of Electrical Engineers,  
American Street Railway Association,  
National Board of Fire Underwriters,  
American Institute of Architects,  
International Fire Chiefs' Association,  
American Bell Telephone Company,



Western Union Telegraph Company,  
Postal Telegraph Company,  
National Electric Light Association,  
General Electric Company,  
Westinghouse Electric & Manufacturing Company,  
who should "undertake the codification, promulgation and enforcement of one standard set of rules, which shall meet as fully as possible the conditions that now exist, and be acceptable to all electrical, insurance and allied interests."

Later the Underwriters' National Electric Association, the American Society of Mechanical Engineers and the Factory Mutual Fire Insurance Companies were invited to send delegates, and certain others were invited as complimentary delegates.

From this meeting the National Conference on Standard Electrical Rules was organized in New York on March 18 and 19, 1896, and the voting delegates were limited to those from the

American Institute of Architects,  
American Society of Mechanical Engineers,  
American Institute of Electrical Engineers,  
American Street Railway Association,  
Factory Mutual Fire Insurance Companies,  
National Association of Fire Engineers,  
National Board of Fire Underwriters,  
National Electric Light Association,  
Underwriters' National Electric Association.

A Committee on Code was appointed, on which your delegate had the honor to serve, to which was assigned the task of amending and codifying the standard electrical rules. That committee met in New York, in October, 1896, and prepared a number of suggestions for changes and additions in the underwriters' rules. These were referred to the Underwriters' National Electric Association, through the representative of the National Board of Fire Underwriters. At the annual meeting of the Electrical Committee on December 8, 1896, the suggestions from the Code Committee of the Conference, together with other suggestions from various sources, were considered, and on December 11 several members of the Electrical Committee met with the Code Committee of the Conference, and a report was made, showing that nearly all of the Conference suggestions had been adopted, and giving the reason why those which were rejected did not meet with approval.

At the meeting of the Electrical Committee of the Underwriters' National Electric Association, a subcommittee was appointed to recodify the rules, so far as possible, without changing the rules themselves, and to submit the results of their work to the Electrical Committee for approval. This work of recodification was duly undertaken, but proved to be a work of considerable magnitude, which will account for the delay of some six months in issuing the rules. The recodified rules were submitted in proof to the Electrical Committee of the Underwriters' National Electric Association and to the Code Committee of the National Conference, and meetings of the committee with the recodification committee were held in New York in May and in Boston in June. The rules as recodified have been adopted by the Underwriters' National Electric Association and the National Board of Fire Underwriters, and the Code Committee of the National Conference passed the following resolution:

"Resolved, That each delegate who attended the National Conference on Standard Electrical Rules be sent a copy of the National Electrical Code, stating that said code had met with the approval of the Code Committee of the National Conference and the Code Committee of the Underwriters' National Electric Association, and stating the belief of our committee that there was no necessity for calling the Conference together as a body again, entailing, as it would, a very considerable sacrifice of time and money, and requesting their immediate reply if they acquiesce in this recommendation, and approve of the report submitted by the committee, and by the president, secretary and treasurer of the Conference itself. In the event of their objecting, and desiring that the Conference as a body be called together as a body to receive the committee's report, answer is to be made within ten days, or their opinion is to be considered as favorable, and the code and reports published through the press by the Code Committee, and each delegate represented at the Conference requested to bring same formally before his association for approval."

And the rules of the National Board of Fire Underwriters are now printed with the following note:

"The National Electrical Code, as it is here presented, is the result of the united efforts of the various electrical, insurance, architectural and allied interests, which have, through the National Conference on Standard Electrical Rules, composed of delegates from the following associations, unanimously voted to recommend them to their respective associations, for approval or adoption:

"American Institute of Architects,  
"American Institute of Electrical Engineers,  
"American Society of Mechanical Engineers,  
"American Street Railway Association,  
"Factory Mutual Fire Insurance Companies,  
"National Association of Fire Engineers,  
"National Board of Fire Underwriters,  
"National Electric Light Association,  
"Underwriters' National Electric Association,

"And as soon as meetings of the associations are held and action taken, the fact will be noted."

These rules received the approval of the National Electric Light Association at its meeting at Niagara Falls, held June 8, of the present year, and will, undoubtedly, receive the approval of the other associations represented in the National Conference; so that now for the first time a "National Electrical Code" is issued, stamped with the approval not only of the insurance interests, but also of the national societies of electrical, architectural and allied interests.

The principal reason why harmonious relations between the electrical and insurance interests in the matter of uniform rules has not sooner been reached is, we believe, because there was no organization through which the electrical, architectural and allied interests could be reached, until the National Conference on Standard Electrical Rules was formed. Just as soon as this Conference was formed and the committee was appointed to act with the electrical committee of the Underwriters' National Electric Association, between whom the utmost harmony has prevailed, and suggestions from either have been most courteously considered by the other, complete uniformity of rules was secured.

As matters now stand the Conference has accomplished its work, and has adjourned. The organization remains, and the work that it has done stands as a precedent, so that, should occasion ever again demand, the machinery could be easily put into motion. It is, however, felt that considering the very satisfactory results now secured, and the slight changes needed in all probability for several years to come, that the Underwriters' National Electric Association is the most available body to charge with this work of revision, for the immediate present, which association will give in the future, as it has endeavored to do in the past, the fullest hearing on all criticisms, and the members of the National Conference will be fully welcomed and with full privileges of voting at the Underwriters' meetings, thus giving the very largest liberty and breadth to the make-up of the Underwriters' Association.

The expense incurred by the Institute in this work has been an assessment of \$25 for conference expenses ordered by the Board of Directors, and the expense of your delegate, \$7.50.

In accordance with the expressed wish of the Conference the accompanying resolution is presented for your consideration. Respectfully submitted,

ALFRED STONE, *Delegate.*

"Resolved, That the American Institute of Architects approves the rules and requirements forming the 'National Electrical Code'—edition of 1897—as recodified and adopted by the Underwriters' National Electric Association, the National Board of Fire Underwriters, and the Code Committee of the National Conference.

"Resolved, That the secretary be directed to send a copy of the above resolution to the Underwriters' National Electric Association."

The report of the committee appointed at the last convention—George Keister, of New York, chairman—on Revision of the Constitution and By-Laws, was here submitted. As it was printed and widely circulated before and also at the convention, and as the matter was given further consideration by the subsequent vote of the convention and action deferred for a year, it is not printed in these proceedings.

The remainder of the session was devoted to the consideration of the reports, including the annual address of the president, all of which were referred to committees.

The action of the State commissioners of Pennsylvania in regard to the competition for a State capitol building was discussed, the entire trend being in the direction of commending the stand taken by the governor and attorney-general, and condemnatory of the action of the commissioners.

## SECOND SESSION.

The next session met on Thursday morning at 10 o'clock, and the consideration of the report of the Committee on Constitution and By-Laws was taken up, George Keister, chairman, giving a detailed explanation of the printed report presented earlier in the session.

A report containing a draft of a similar Constitution and By-Laws had been received by the Board of Directors from R. D. Andrews, of Boston, and Mr. Andrews explained its purpose.

The convention resolved itself into a committee of the whole, and took up the subject of the revised Constitution and By-Laws, and in accordance with the suggestion of the committee appointed to suggest a mode of procedure, the following motions were submitted, discussed and voted upon:

1. That the Institute be a purely national organization without local Chapters or organizations of any kind.

Decided in the negative.

2. That the government of the Institute be through delegates sent to conventions by the Chapters.

Decided in the affirmative.

3. That the scheme of local government include compulsory State Associations.

Decided in the negative.

4. That the members in the Institute, excepting Honorary and Corresponding members, be hereafter divided into two classes, namely: Fellows and Associates.

Decided in the affirmative.

5. That a subcommittee be appointed to report to the convention at an early hour a course of further action.

Decided in the affirmative, and Messrs. George Keister, J. F. Alexander and Robert D. Andrews were appointed as such committee.

After considerable discussion it was decided that the Institute should continue an organization, consisting of a national body with local societies, and that State organizations should not be compulsory. The vote on the latter point was very evenly divided. It was also decided that there should be two grades of membership, after which a committee was appointed to report on the entire matter at the next session, Messrs. Keister, Andrews and Alexander being appointed.

The following report was received from the Committee on Chapter Reports:

Your committee has examined the reports of Chapters received for the current year, and is gratified to note the exceptionally large increase of membership in the New York and Boston Chapters. It also especially commends the zeal and activity shown by the report of the Colorado Chapter.

No reports were received from seven, or about one-third, of our Chapters, and your committee fails to understand why any Chapter, having a proper interest in the workings of the Institute, should omit to perform so simple and yet important a duty.

EDWARD H. KENDALL, *Chairman.*  
J. F. ALEXANDER.  
E. O. FALLIS.

This was followed by the following report on the president's address:

DETROIT, MICH., September 30, 1897.

To the Thirty-first Annual Convention of the American Institute of Architects:

Your committee had given careful consideration to the suggestions made by your president in his opening address and finds that all of them should receive the unqualified indorsement of the Institute and that this convention should take such steps as may be necessary to insure the carrying out of the president's suggestions.

Your committee therefore recommends that the president be authorized to appoint the committees whose establishment has been proposed by him in his annual address, and that when so appointed these committees shall consider the views expressed by the president in his address as the instructions given them by this convention for the guidance of their conduct.

DANKMAR ADLER.  
ROBERT D. ANDREWS.  
CASS GILBERT.

The report of the committee on licensing architects received at the previous session was taken up, and Mr. Pierce, chairman of that committee, requested that Mr. Adler, of Chicago, be requested to speak on the subject. Mr. Adler reviewed the Illinois State law and explained its provisions.

The following letter from Frederick Banmann, of Chicago, was read by the secretary:

Alfred Stone, Esq., Secretary A. I. A.:

CHICAGO, September 28, 1897.

DEAR SIR,—Allow me to express my deep regret at being unable to attend the present meeting, the more so, since, as it is, I am under disadvantage of merely communicating a subject, the importance of which calls for its personal introduction, a matter which not only interests our profession but also the country at large.

On the fourteenth day of December, 1899, one hundred years will have elapsed since the "Father of our Country" passed into eternity. He reposes at the side of his life companion in a plain vault, constructed in harmony with the conditions of his will. Thus it became a sacred charge upon posterity to preserve this vault in its original form; subject though it be to the ever destructive influences of climate. To protect it against these influences it will



be necessary to erect over the same a special and appropriate structure, in the form of a chapel, in which memorial services may be held. In case the idea finds approval it would unquestionably be requisite to submit the same to the "National Society of the Daughters of the American Republic" and learn its views. In case these ladies, as guardians of Mount Vernon, are inclined, as I trust they will be, to join hands with our Institute in the undertaking, the project may readily be put into working order, and arrangements made for laying the corner stone on December 14, 1899.

I must confess that this subject matter presented itself to me some years ago, when Mount Vernon was visited by members of our Institute, which at that time held its annual meeting at Washington. The atmosphere was thick with mist and rain, and seemed to be as though impregnated with suggestions of the kind at a place so sacred to the heart of every true American. With candid regards to all colleagues present. Yours most sincerely,

FREDERICK BAUMANN.

The letter with its recommendations was referred to the Executive Committee with power to act.

The following report was presented by the Committee on Board of Directors' report, John H. Coxhead, of Buffalo, chairman:

The committee find that the Board of Directors, in their annual report, have covered a broad and valuable field of work, some of which has been executed, and other portions suggesting plans for the future.

The Institute is to be congratulated upon your labors in conjunction with the Hon. Lyman J. Gage, Secretary of the Treasury, which reveals an earnest devotion to architecture and to the Institute.

In connection with government competitions, the committee wish to call attention to the great danger to the architecture of the country which may arise under the Tarsney law in case of a Secretary of the Treasury who should not be in sympathy with its proper execution. It would be easy and probable for such a Secretary to call upon congressmen when a building was to be erected in their district to select the competing architects and in this way men who were party workers would be named without regard to fitness, but on account of their ability to aid the congressmen in political matters and architects who would favor political workers as contractors and assistants. For this and other reasons we think that the Institute should take active measures to insure such modifications of the law as would secure its successful operation without the possibility of political or personal influence in the selection of the architects who make the competitive designs, and place the operation of the law under a non-partisan commission. We further recommend that the directors urge the modification of the law so provided for the payment of expert fees and for the preliminary sketches presented by the invited architects.

The success of the Illinois branch of the profession proves what may be attained by active cooperation toward legalizing the profession, and we would recommend that the Board of Directors appoint a committee to urge and assist associations in other States in accomplishing the same ends.

Your Board is to be especially commended for their prompt and decisive action in regard to the competition for the Pennsylvania State Capitol. The appeal to the Institute by dissenting parties has established a precedent which will certainly show the public that the Institute proposes to deal fairly and justly with all matters submitted to it.

The reason of failure in the Pennsylvania State competition should cause the Directors to make an earnest effort to have schemes for competitions so drawn that they will not be in control of political or partisan commissions. The programme should be so arranged that the experts' opinion could not be overthrown.

In reference to establishing headquarters of the Institute at Washington, two plans are feasible: First, an association with the National Museum similar to that between the Museum and the National Academy of Sciences and of the National Historical Society. These societies have their headquarters in the National Museum, and the Museum is the custodian of their archives, libraries, and other collections. The advantages of such an association would not overshadow the Institute, but would aid in the acquirement of an architectural museum through the Smithsonian's correspondents who are in all parts of the world, and as well through the influence of the Museum officers with Congress; these points, in addition to the fact that the Museum already has quite a collection of architectural matter in its possession as well as architectural books in its library, which would form a nucleus for additions under the auspices of the Institute. The secretary or some other accredited member of the Institute would be a curator of the Museum in charge of the architectural collection. The proceedings and investigations made by the Institute would be published at the Government Printing Office free of expense.

If it is thought more desirable for the Institute to have their own building, "Octagon House," one of the best examples of work done in the year 1800, can be secured for \$30 per month; its plan, character of work and location make it peculiarly suitable for the headquarters of the Institute. We would recommend the Board of Directors to take advantage of one of these opportunities which are open at the present time.

The Institute should feel gratified with the experiments on timber made by Mr. Fernow, which tests we believe could be made with greater practical utility to the architects of the country, inasmuch as they would then be made by some one familiar with the use of material in the construction of buildings, and we would therefore recommend that steps be taken to urge upon Congress the advantage of appropriating money, and of authorizing the Supervising Architect of the United States to establish a testing station for all kinds of building material and methods of construction and directing him to issue a yearly report, giving the result of such tests.

Respectfully submitted,

JOHN H. COXHEAD, *Chairman.*  
GLENN BROWN.  
W. B. ITNER.

The report was well received and accepted, and the session adjourned to 2 P.M.

At the opening of the afternoon session, Mr. Keister reported on behalf of the committee appointed at the previous session as follows:

Your committee appointed to recommend further action in regard to the revision of Constitution and By-Laws, unanimously report that it is their opinion that the matter should be recommended to a committee of three, who shall draw a form of Constitution and By-Laws in accordance with the action of the committee of the whole upon the questions submitted to and considered by it, and that they shall report the same to the Board of Directors at its next annual meeting; and the Board is hereby requested to amend, approve and offer to the Fellows of the Institute for ballot by letter, said form of Constitution, and the Board shall issue at the same time a proposed code of By-Laws solely for the better explanation of the Constitution thus offered. If the Constitution be adopted as the result of the letter ballot, the committee shall receive the suggestions of Fellows upon the proposed By-Laws, and present a final code of By-Laws for amendment and adoption at the next annual convention, as provided for in Article XI of the By-Laws.

The report was adopted, and the following gentlemen were appointed by the president: R. D. Andrews, Boston; George Keister, New York; George C. Mason, Philadelphia.

Cass Gilbert, of St. Paul, read a paper, "Architectural Education."

Mr. Adler moved that the clause in Section 1 Article IV of the By-Laws be so amended that the office of president be extended two years, explaining that this was necessary because of the intimate knowledge possessed by the retiring president of matters under consideration by the Institute. Mr. Yost also eulogized

the president, but amended the resolution to one year. This was unanimously ordered by the convention.

Two committees, consisting of Messrs. Nickerson, Drach, and Ittner, and Patton, Brown and Mahurin, were appointed to nominate officers and directors for the ensuing year.

The report of the committee on the Pennsylvania State Capitol competition matter was referred to a committee consisting of Messrs. Adler, Preston and Treat, and the session adjourned.

#### LAST SESSION.

The session opened with the election of the honorary and corresponding members recommended by the Board of Directors. Mr. Adler, for the committee, submitted the following report:

*To the Thirty-first Convention of the American Institute of Architects:*

GENTLEMEN,—The undersigned, to whom you have referred the communications received from your Philadelphia Chapter, and from Messrs. Furness, Evans & Co., relating to the conduct of a competition instituted for the purpose of selecting an architect for a proposed new Capitol Building for the State of Pennsylvania, beg leave to report as follows:

We have carefully read the communications above referred to, as also documentary evidence, consisting of twenty-six individual exhibits, among which are certified copies of many original documents, and after careful and conscientious consideration have arrived at the following conclusions:

*First.* That the programme of the said competition was approximately ideal in the careful working-out of every detail tending to the protection of the natural and legal rights of all the parties most interested therein.

*Second.* That as appears from the evidence submitted to us, the Board of Experts, acting under the terms of said programme, discharged its duties faithfully and intelligently.

*Third.* That the said programme is a contract entered into between the State of Pennsylvania, through its Commissioners, and the competing architects, and that failure on the part of said Commissioners to act in accordance with the finding made by the Board of Experts under the terms of said programme constitutes a flagrant breach of contract, and is a high-handed outrage and a disgrace to the State of Pennsylvania.

*Fifth.* We find that the publicly recorded official statements of the Board of Experts, of Governor Hastings and of Attorney-General McCormick, cover the case so completely in all its bearings that argumentation on our part is unnecessary.

*Sixth.* We endorse most emphatically the resolutions passed with reference to this matter by the Philadelphia Chapter of the American Institute of Architects, and by the Board of Directors of the Institute, and wish to place ourselves on record as approving and indorsing the action of the Board of Experts, of Governor Hastings and of Attorney-General McCormick.

(Signed) DANKMAR ADLER,  
S. A. TREAT,  
W. C. PRESTON,  
*Committee.*

Received and unanimously adopted by the Institute.

ALFRED A. STONE, *Secretary.*

Mr. Adler followed his report with remarks reviewing the programme of the Harrisburg competition and the subsequent action of the commissioners. When he referred to the action of a firm of architects and their petition in regard to the acceptance of their plans and their claim for recognition and their desire to crown their achievements on the battlefield by serving the State by designing the capitol, much amusement was manifested by the assembly. The report was received and unanimously adopted.

Mr. Cook said in regard to Committee on Arts and Sciences, that he would propose a standing committee be appointed at once. This was done by appointing Mr. Cook chairman, and merging the special committee on electricity into it, Mr. Cook to choose the remainder of the committee.

The following officers were elected:

President, George B. Post, of New York.

First vice-president, W. L. B. Jenney, of Chicago.

Second vice-president, C. Howard Walker, of Boston.

Directors for three years: Edward H. Kendall, of New York; Cass Gilbert, of St. Paul; James S. Rodgers, Jr., of Detroit; A. G. Preston, of Boston; George W. Rapp, of Cincinnati; Edmund M. Wheelright, of Boston; Glenn Brown, of Washington; George A. Frederick, of Baltimore.

The convention voted to meet next year at Pittsburg, but the number voting was so small it was decided to leave the place of next convention to the discretion of the Board of Directors. The convention then adjourned.

#### CONVENTION NOTES.

E. E. BURKE, of Memphis, was the oldest architect present, and was looked upon with much respect by his younger colleagues.

MR. PRESTON still carries his camera and snaps the passing scene. His must be an interesting pictorial record of conventions of the A. I. A.

A NUMBER of the visitors brought their bicycle togs with them, and it will not be many years before the entertainment committee at conventions will provide wheels instead of carriages for the regulation procession through the parks and boulevards.

WILL BRYCE MUNDIE, of Chicago, illustrated the advantages of the bicycle as a coming branch of architectural practice by completing the journey from Chicago and also returning on his wheel. The distance traveled was 302 miles, and the average time 75½ miles per day.

THE vigor with which Mr. Cook presents his desires in regard to a more scientific and investigating tone in the Institute, was one of the most notable incidents of the convention. Every idea seems clear and practical and his enthusiasm is having its effect. He has already started a movement that will probably be felt for many years to the added strength and influence of the Institute.

It should be taken as an evidence of "better times" that there were more material concerns, and all of the best class, represented by exhibits at this convention, than has been



observed for many years. It may not be as effective a form of advertising as the direct presentation through an architectural journal, but it is a valuable adjunct to a liberal and continued use of printers' ink.

THE visitors were invited to inspect a recently completed hotel and bathhouse, which was so perfect in every appointment that the bachelors left their hotels almost in a body and placed themselves in the care of Mons. Chiera, who has certainly the most enjoyable and complete European hotel for men in the country, and a talent for managing that makes each guest an enthusiastic patron and well wisher.

BERRY BROTHERS, of Detroit, placed at the disposal of the local Chapter a fine "pleasure" steamer, and the visitors spent a delightful afternoon upon the river and through the St. Clair flats. There was a proposition to compliment Berry Brothers by three cheers when the boat landed, but there was hardly time for many of the guests to get to their trains; but the agreeable compliment presented by that firm will be remembered by all.

THE work of the Michigan Chapter in providing a suitable hotel and convention hall, and their indefatigable efforts in the direction of entertainment was as great as it was appreciated. Its members formed a committee of entertainment, and not only as a Chapter but as individuals they saw that every want should be anticipated. Zach Rice and his colleagues merited and received the heartfelt thanks of every visitor. Their entertainment left nothing to be desired.

IN the report of the outing of the Cleveland Architectural Club, published in the September INLAND ARCHITECT, over the signature of the club's secretary, reference is made to the new high-school building at Detroit, designed by Malcolmson & Higginbotham. The writer's remark that "this building illustrates what not to do when designing high-school buildings" shows a careless disregard for his own, and eventually the club's reputation as architectural critics, and the reputations of others, as the exterior design is above the average in quality. It happened that many of the visiting architects made a special inspection of this building, and the most competent of them pronounced it not only good in design, but one of the best planned and appointed they had ever visited.

#### OUR ILLUSTRATIONS.

Residence, Cincinnati, Ohio.  
 Residence, New Haven, Connecticut.  
 Phelps's Hall, Yale College, New Haven, Connecticut.  
 First National Bank Building, New Haven, Connecticut.  
 Dormitory Building, Yale College, New Haven, Connecticut.  
 Gymnasium Building, Yale College, New Haven, Connecticut.  
 Villa Arons, near Berlin, Germany. H. Solf, Architect, Berlin.  
 Apartment building for George P. Cary, Chicago. Pond & Pond, architects.  
 Primary School Building at Lake Forest, Illinois. Pond & Pond, architects, Chicago.  
 The Prudential Assurance Company's offices, Nottingham, England. A. Waterhouse, architect.  
 Vanderbilt Memorial Building, Yale College, New Haven, Connecticut. Charles C. Haight, architect, New York.  
 Buildings for Trans-Mississippi and International Exposition at Omaha, June to November, 1898. Arch of the Administration, Walker & Kimball, architects; Fine Arts Building, 246 feet long by 130 feet wide, Eames & Young, architects; Manufactures Building, 300 feet long by 140 feet wide, S. S. Beman, architect; Agriculture Building, 400 feet long by 148 feet wide, Cass Gilbert, architect.

#### PHOTOGRAVURE PLATES.

*Issued only with the Photogravure Edition.*

Chester Park Clubhouse, Cincinnati. A. O. Elzner, architect.  
 Residence of W. L. Hunt, Cincinnati. S. S. Godley, architect.  
 Residence of Ambro Park, Cincinnati. M. H. Burton, architect.  
 Church of the Holy Angels, Chicago. Egan & Prindville, architects.  
 Central Part, Home for the Friendless, Chicago. Charles S. Frost, architect.  
 Hull Biological Laboratories, Chicago University; Henry Ives Cobb, architect; three plates showing the following buildings: Botany, Anatomy, Physiology.

#### ASSOCIATION NOTES.

##### PITTSBURG ARCHITECTURAL EXHIBITION.

Pittsburg's initial architectural exhibition, which opened September 16 at Carnegie Art Gallery, Allegheny, proved to be an event sufficiently attractive, notwithstanding the bad weather, to draw a large crowd of interested friends in response to the couple of hundred invitations issued for the event. It opened with a reception intended principally for the architects and their friends, and the exhibition was open to the public for the next ten days. It is remarkable that, considering the fine specimens of art work shown, this exhibit should be the first of its kind ever held in the city.

The architects who contributed to the exhibits were: Alden & Harlow, Bartberger & East, Rutan & Russell, H. D. Gilchrist,

J. E. Allison, Long & Carroll, Fred Osterling, Riddell & Kiern, James T. Steen, Edward Stotz, T. D. Evans, Charles W. Bier, John T. Comes, F. H. DeArment and U. J. L. Peoples. The Architectural Club was not represented, with the exception of the work of its president, A. W. J. East. There were about two hundred drawings in all, showing the Renaissance, Old English, Colonial and Romanesque styles of architecture.

##### FOURTH INTERNATIONAL CONGRESS OF ARCHITECTS.

The fourth international congress of architects was held at Brussels, August 28 to September 2, under the auspices of the Société Centrale D'Architecture of Belgium, on the twenty-fifth anniversary of its foundation. The American Institute of Architects was not represented. The Supervising Architect was represented by Mr. George Totten, Mr. Albert Kelsey, representing the T-Square Club, of Philadelphia, and a Mr. James Kelley, of Boston, completed the American delegation. There were over three hundred delegates present, representing fourteen countries.

##### WASHINGTON STATE CHAPTER.

The third regular annual meeting of the Washington State Chapter was held at Tacoma, September 12, George W. Ballard, president. The draft of Constitution and By-Laws submitted by the American Institute of Architects was fully discussed, and also the advisability of State legislation in regard to the licensing of architects, resulting in a resolution indorsing the views of the Institute being unanimously adopted.

The officers elected for the ensuing year are: President, W. E. Boone, of Seattle; vice-president, George W. Ballard, of Tacoma; secretary, Charles H. Bebb, of Seattle; treasurer, E. J. Russell, of Tacoma. The Washington Chapter is in a flourishing condition.

##### CHICAGO ARCHITECTURAL CLUB MEDAL COMPETITION.

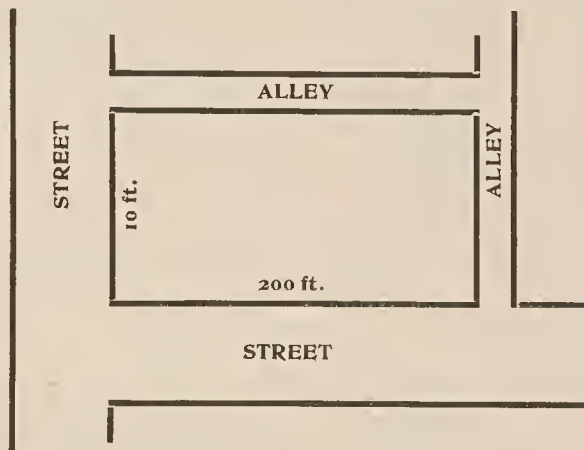
A club member has made a donation for this competition; the first and only prize is to be a gold medal. Mention will be made of the two drawings next in merit to the prize drawing. The competition is open to all members of this club who have not practiced architecture as principals for more than two years. The author of each design must execute all drawings without assistance. The award will be made by a committee of prominent architects.

##### A CLUBHOUSE FOR ARCHITECTS.

The programme for this competition was inspired by the desire to bring architecture into closer relation to its sister arts, sculpture and painting, thus broadening the architect's artistic horizon. The architect will feel more and more the stimulus created by having constantly before him the best examples of the three arts. He will unconsciously strive to give art its proper place in his work, appreciating that it will be judged by future generations, and that an architect can do much toward uplifting the taste and artistic feeling of the people.

It is evident from this introduction that the building is to be monumental, bearing witness to its high function as a shrine of true art.

The building is to be located on a city lot 110 by 200 feet with the streets as shown in the plat.



There is to be a high basement which is to contain a dining room, smoking room, billiard room, bathrooms, etc. The boilers and machinery are to be in a sub-basement.

The first story is to contain a large rotunda, the central and most important feature of the building. It is to extend upward through the total height of the building lighted by skylight, which may have a glass ceiling light below the roof.

In the rotunda are to be placed full size classic casts such as columns, entablatures, etc.

Sculpture will also have a prominent place in it.

The first story is to contain, further, a lecture hall, which is to have a seating capacity for about 200 to 400 people, and ample wall space to provide a place for the second of the sister arts, painting. This room is, therefore, to be a lecture hall, lighted by skylight, combined with a permanent exhibition room of paintings. This story shall also contain the following rooms: Library, parlor, custodian's room, office, vestibule, cloak rooms, a men's lavatory and a women's retiring room.

The second story is to be devoted entirely to the work of the club. It is to contain three classrooms one small exhibition room for architectural exhibitions only; further, the secretary's, the president's office, lounging room and a lavatory.

The design may or may not have an attic story. If there is an attic it is to contain bedrooms for the club members and modeling rooms.

The drawings required are a first and second floor plan on a scale of 1-16 inch = 1 foot, the front elevation 1/8 inch = 1 foot, a section taken through the center of the rotunda at 1-16 inch = 1 foot.

Drawings to be rendered at will; to be mounted on strainers 33 by 46 inches without frame or glass.

A sealed envelope containing the name and full address of the author must be securely fastened to each drawing; the drawings and envelopes are not to be marked by a name or device of any kind.

Drawings must be delivered to Arthur G. Brown, secretary, Chicago Architectural Club, at the clubrooms in the Art Institute, on or before January 15, 1898, charges to be prepaid. All drawings, except the prize drawing, will be returned at the expense of the contributor, but the club reserves the right to exhibit any or all at the club's exhibition in 1898.



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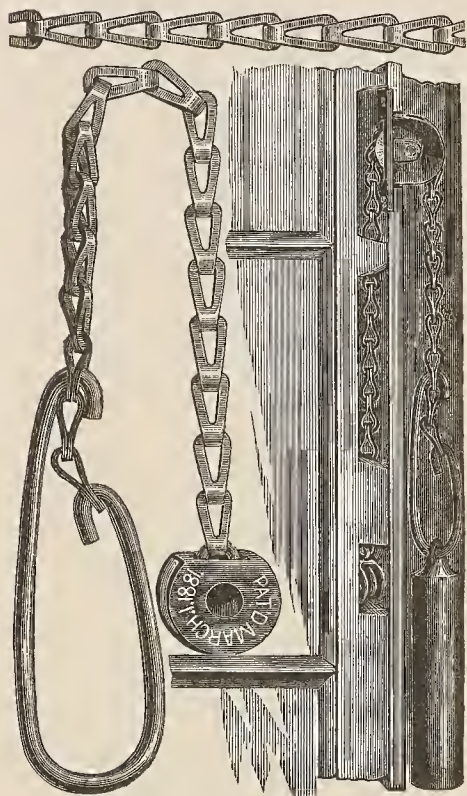
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"Spence," "Perfect," "Advance,"  
"Tropic," "Little Giant."

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"Florida," "Soleil," "American,"  
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They do not burn the oxygen from the  
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PROBABLY THE LARGEST FIRM  
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EXCLUSIVELY  
**HEATING APPARATUS.**  
STEAM AND  
HOT WATER THAT...  
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Parties travel in Pullman tourist sleeping cars  
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T. A. GRADY,

Excursion Manager, C. B. & Q. R. R.,  
211 Clark Street, CHICAGO, ILL.

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# THE INLAND ARCHITECT AND NEWS RECORD

Vol. XXX.

ADVERTISERS' TRADE SUPPLEMENT.

No. 3

## Valuable Publications Free.

Any architect can secure valuable books of reference without cost by sending for the catalogues of materials, etc., noticed from month to month in these columns. Large sums are spent on these catalogues, and they contain much practical information. Many are art productions. They may be obtained free on application to those issuing them. In writing please mention THE INLAND ARCHITECT, and oblige the journal and the dealer.

## REQUESTS FOR CATALOGUES AND SAMPLES.

Those wishing catalogues and samples sent them by dealers in general may have their names inserted under this heading free of charge. The only recompense desired is that the dealers who send catalogues to these addresses give THE INLAND ARCHITECT due credit for business benefits that result.

TURGEON & LAFRENIERE, Architects, Room 10, No. 55 St. Francis Xavier Street, Montreal, Canada.

D. P. CLARK, of Bay City, and A. E. MUNGER, of Saginaw, Michigan, have formed a copartnership, the style of the firm name and address being Clark & Munger, Architects, Suite 414 Phoenix Block, Bay City, Michigan. No catalogues except most recent inventions and improvements are needed, as each member of the firm had an ample supply.

JOHN H. GRAINGER, Chief Architect, Perth, West Australia.

## WILKS HOT-WATER HEATERS.

These heaters have been established since 1857; improved 1864, and, being progressive, have kept up to the times. The following testimonials, selected from hundreds, speak for themselves and are practical advertising for S. Wilks Manufacturing Company's heaters:

PENNSYLVANIA COMPANY,  
ERIE & ASHTABULA DIV.  
OFFICE ENGINEER M. W.,  
LAWRENCE JUNCTION, Pa., March 2, 1897.

The No. 30 by 48 Wilks heater furnished by you for passenger station at Ashtabula, Ohio, has given thorough satisfaction and kept the depot warm during the severe weather in January. It is economical as to coal consumption and I am very much pleased with it. (Signed) W. G. WHITE,  
Engineer M. W.

WHITNEY COMPANY, SANITARY PLUMBERS,  
ALBUQUERQUE, N. M., May 14, 1897.

Referring to the Wilks heater we purchased from you last fall: we put it into the residence of one of our bankers here, and find it is giving great satisfaction, both as to ease of management, cost of fuel and general results. In fact, we think that it is giving better satisfaction than any furnace in use in this section at the present time. Yours truly,  
WHITNEY COMPANY.

GEORGE A. MUTHS,  
Grower of Hothouse and  
Faucy Vegetables,  
MOBILE Ala.,  
April 26, 1897.

The hot-water heater I bought of you last summer gave perfect satisfaction. The house is 192 feet long and 27 feet wide. The nurserymen were all gazing at me when I put it up, but when the severe weather (4 degrees) came, they all expressed their surprise and wanted to know where to get them. I referred them to you, and I suppose that you have since received several inquiries from here. We intend to increase our house this summer, and will need another heater.

Yours respectfully,  
GEORGE A. MUTHS.

RESIDENCE OF L. Z. LEITER,  
WASHINGTON, D. C., Dec. 7, 1896.

Having had charge of one of your heaters for Mr. L. Z. Leiter, Washington, D. C., I have been testing it for the past month and find it is excellent in every respect. I find it uses only 27 pounds of coal mornings and the same amount in the evening, and keeps nine bathrooms supplied with plenty of exceedingly hot water. It requires but little attention and so far has exceeded my expectations. I have been employed by Mr. L. Z. Leiter as steward for the past eighteen years. Very truly yours,

JOHN ROOK.

CAPT. B. F. DAY, U. S. N.

NAVY YARD,

WASHINGTON, D. C., May 29, 1896.

As you are aware, I have one of your small heaters for my laundry and bath. It gives excellent results

and I consider yours far more efficient and economical than the "Gurney." There are so many other improvements to go on with that I do not know that I can afford to add to the heater capacity this season, but when I do I shall certainly buy another Wilks. Respectfully,  
B. F. DAY, Captain.

These heaters are adapted for hard or soft coal, and can be used in residences, offices, schools, churches, clubs, hospitals, public buildings and for the United States Government. They are recommended by architects, steam fitters, plumbers, and large realty owners.

The company furnish a full catalogue, and would be pleased to have your address for one if in need of this kind of heaters, remembering to state you saw this in THE INLAND ARCHITECT. The company's address is S. Wilks Manufacturing Company, 115-123 South Clinton street, Chicago, Illinois.

## TRADE NOTES.

AN unusually strong testimonial from the new Corcoran Gallery of Art, Washington, D. C., has been given the well-known manufacturer, I. P. Frink:

THE CORCORAN GALLERY OF ART,  
WASHINGTON, D. C., July 31, 1897.

The firm of I. P. Frink, New York, has furnished and put up all the electric and gas lighting fixtures in this building, and it affords me pleasure to state that the lighting of all the rooms, and particularly the picture galleries, by their system of reflectors, has given entire satisfaction.

F. S. BARBARIN, Curator.

THE new Charlevoix Hotel, at Charlevoix, Michigan, is being built by the Chicago and West Michigan Railroad Company, and is being pushed with all possible haste. The scheme of color is to be novel. The roofs and sides, which are all shingled, are being dipped in Dexter Brothers' English Shingle Stains, the new green No. 312. Green seems to be the color this year, and the architects have found out a most important fact, that by using the same colored stain on the roof and sides makes a high roof seem lower and gives a more comfortable appearance to a house.

THE intelligent use of shingle stains in residence and church work is now rightly regarded as one of the most important features of exterior ornamentation. So many shades are made by the manufacturers that the greatest latitude of choice is afforded to the architect, but this very fact renders a judicious selection all the more difficult. To overcome this difficulty, a series of colored pictures have been published by Dexter Brothers, manufacturers of the famous English shingle stain. These pictures are exact representations of buildings on which their stain has been used, showing the superb effect of a harmonious and complete combination of colors. A comparison of two or more colors on an ordinary color sheet is always unsatisfactory and often actually misleading. But when the completed work is shown the result is different. The modified effect which color gives when applied to the roof or sides of a house is pretty clearly shown in an accurate picture, and the designer can select with a skill and certainty after a study of these specimens, such as he could not attain without them.

ARCHITECTS and the trade who have not received the new booklet of the Standard Radiator Company can obtain the same on application to the St. Louis office of the company. This booklet, by the way, which is announced as merely a preliminary publication to a more complete edition of the Standard catalogue, is really an interesting and valuable contribution to trade literature. The manufacturing plants of the Standard Radiator Company are located at Buffalo, New York, and St. Louis, Missouri. The company also maintains offices in New York, Chicago and Boston. They manufacture radiators which are in every sense of the word "standard" as to quality. They call particular attention to their

"Indirect" radiator, for which they claim an efficiency as a heating surface vastly superior to any of the old style pins heretofore offered. It is equally well adapted for either steam or water heating. The connections are at the ends of the radiator instead of in the center. This is not only a matter of great convenience in putting the sections together, but the free circulation of air is not impeded or a valuable portion of the heating surface cut out, as by the old style center connections. Absolutely tight and perfect "stopper" joints are used, which are further strengthened by short bolts connecting section with section.

A UNIQUE combination color chart has been issued recently by Samuel Cabot, of Boston, to illustrate the coloring effects of Cabot's Creosote Stains. A design by Architect William Ralph Emerson was chosen for this purpose, and the originals were made in water-color, with a selection of seven shades from the Cabot color chart to be applied to sides and roof respectively. By an ingenious method of cutting the prints along the gable lines, it is made possible to add any roof section to any wall section or vice versa, thus affording sixteen separate and distinct combinations of wall and roof. The object, which certainly has been very approximately attained, is to give a clear idea of the blending of various colors, and to be of real assistance in choosing a satisfactory color scheme. The idea is certainly commendable and has been carried out in Mr. Cabot's characteristic style, without regard to expense. The several plates are finely executed, on heavy paper, in exact imitation of the water-color originals, and are worthy of preservation by any architect as works of art, to say nothing of their practical usefulness in designing.

AN important contract has been secured recently by the Fireproof Door Company, of Minneapolis, which is worthy of mention because of its peculiar character as well as its magnitude. This company is to furnish all the interior trim for the new building which Mr. Homer Laughlin, of East Liverpool, Ohio, is erecting at Los Angeles, California. The work will be of plated brass and strictly fireproof throughout, including fireproof pressed metal doors, and is one of the largest contracts of the kind ever let in this country. There will be 500 doors, jambs, casings and transoms; 400 corridor windows; 20,000 lineal feet of base; 20,000 feet of chair rail; 20,000 feet of picture molding; 4,000 feet of wire molding in corridor, and 4,000 feet of molding for the top of the marble base; also, trim for 400 exterior windows, the whole order comprising five carloads of material. The building is of 120 by 100 feet area and six stories high. The architect is John Parlan-son, of Los Angeles. The Fireproof Door Company, whose advertisement will be found on another page of this issue, are exclusive manufacturers of Richardson's patent fireproof pressed metal doors, and many other specialties in the line of metallic interior finish.

TREASURY DEPARTMENT,  
OFFICE SUPERVISING ARCHITECT.

WASHINGTON, D. C., September 27, 1897.

SEALED PROPOSALS will be received at this office until 2 o'clock P. M. on the 18th day of October, 1897, and opened immediately thereafter, for furnishing all the labor and materials and fixing in place complete low-pressure, return circulation, steam heating and ventilating apparatus required for the United States Post Office and Customhouse building at Racine, Wisconsin, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Superintendent at Racine, Wisconsin. The right is reserved to reject any or all bids and to waive any defect or informality in any bid should it be deemed in the interest of the Government to do so. Proposals must be inclosed in envelopes, sealed and marked "Proposal for the Heating and Ventilating Apparatus for the United States Post Office and Customhouse at Racine, Wisconsin," and addressed to

C. E. KEMPER,  
Acting Supervising Architect.





HOUSE AT NEWPORT, RHODE ISLAND. WM. R. EMERSON, Architect.

Any painter can mix a thin paint and call it stain.

## DEXTER BROTHERS' ENGLISH SHINGLE STAINS

are made from pigments ground as fine as tube colors, and only pigments which are absolutely transparent are used. These are the only stains the tannic acid of the redwood and cedar shingle will not affect.

Send for sample boards and further information to

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CHAS. M. HAYS, General Manager, Montreal.  
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CHICAGO, ST. LOUIS,  
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to

### Hot Springs, Old Point Comfort,

and all points in Virginia and the Carolinas.

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and all points in Florida.

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Through Palace Sleeping Cars between

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twelve years. A good  
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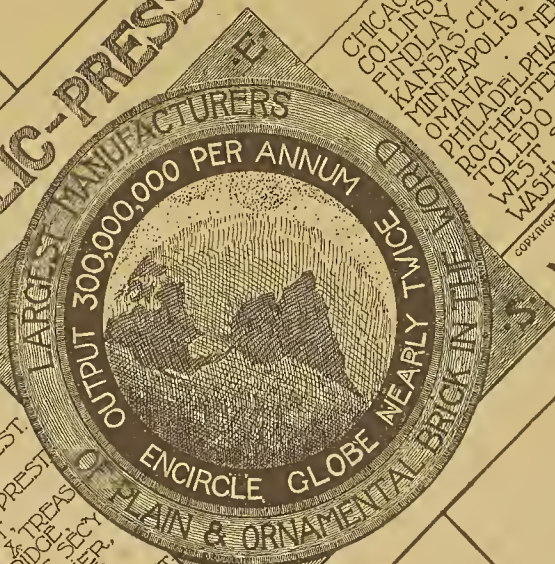
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Manufacturers, Wholesale and Retail Dealers in

**BUILDERS' HARDWARE,**

ART METAL WORK OF ALL KINDS,

Cooling Rooms, Mechanics' Tools, Pocket and Table Cutlery.

Our stock is large and carefully selected. The assortment includes, besides all the standard lines, the NEWEST and BEST goods of ALL THE LEADING MAKERS.

SOLE OWNERS OF

**Skidmore's Patent Adjustable Window Balcony**

and Simkins' Patent Window-Cleaners' Safety Belt

(For Cleaning the Outside of Windows of High Buildings),

The very best and the cheapest devices for this purpose.

Send for circulars and estimates.

**NOTICE OUR NEW LOCATION.** Our stores are 180 feet deep on Randolph Street and 80 feet on State Street. We occupy six floors with every facility for showing and handling goods.

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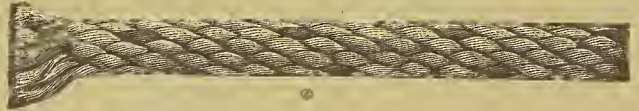
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Telephone, Express 551 and 554.

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**SAMSON SPOT CORD**

You can tell at a glance that no other Sash Cord is substituted. It is warranted to be of the best cotton stock, smooth finish and perfect braid.

**SAMSON CORDAGE WORKS**  
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SAVES TIME AND MONEY.

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Saves Money for Owner, Architect and Contractor.

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Not affected by climatic changes, brine or acid fumes. Recommended especially for protection of bridges, roofs, structural iron, fire escapes, etc.

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WE make the entire interior finish for all classes of buildings; in any pattern and finish. Write for details and references on completed work.

**Fireproof Door Co.**

MINNEAPOLIS, MINN.

THESE are the things that can be seen. They make your structural investment of some value, and reduce insurance to a minimum.

Duplex Plating, Fireproof Shutters,  
Steel Paneled Wainscoting.

In place of inflammable woods, use our non-inflammable goods.



EXCLUSIVE MANUFACTURERS OF

**FIREPROOF  
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No heavier than wood; they take a finer finish.

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